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ABSTRACT

The objective of this publication is to focus attention on the various aspects of school programs that relate to outdoor use, and to determine how the site might be structured to meet the school's educational and traffic flow requirements. Subjects discussed include the integration and organization of community and school facilities in order to reduce land and development costs; site selection criteria that indicate the type of site best suited to fulfill school needs; various site uses and their relationship to each other; and site requirements. The guide contains design criteria that illustrate the problems related to school sites including pedestrian and vehicular movement, parking, visual space, lighting, planting, other landscape elements, consideration of factors relating to maintenance, and the design principles involved in the solution of these problems. (Author/MLF)

Ministry of Education

Principles of Site Development

Elementary Schools K-6

U.S. DEPARTMENT OF HEALTH
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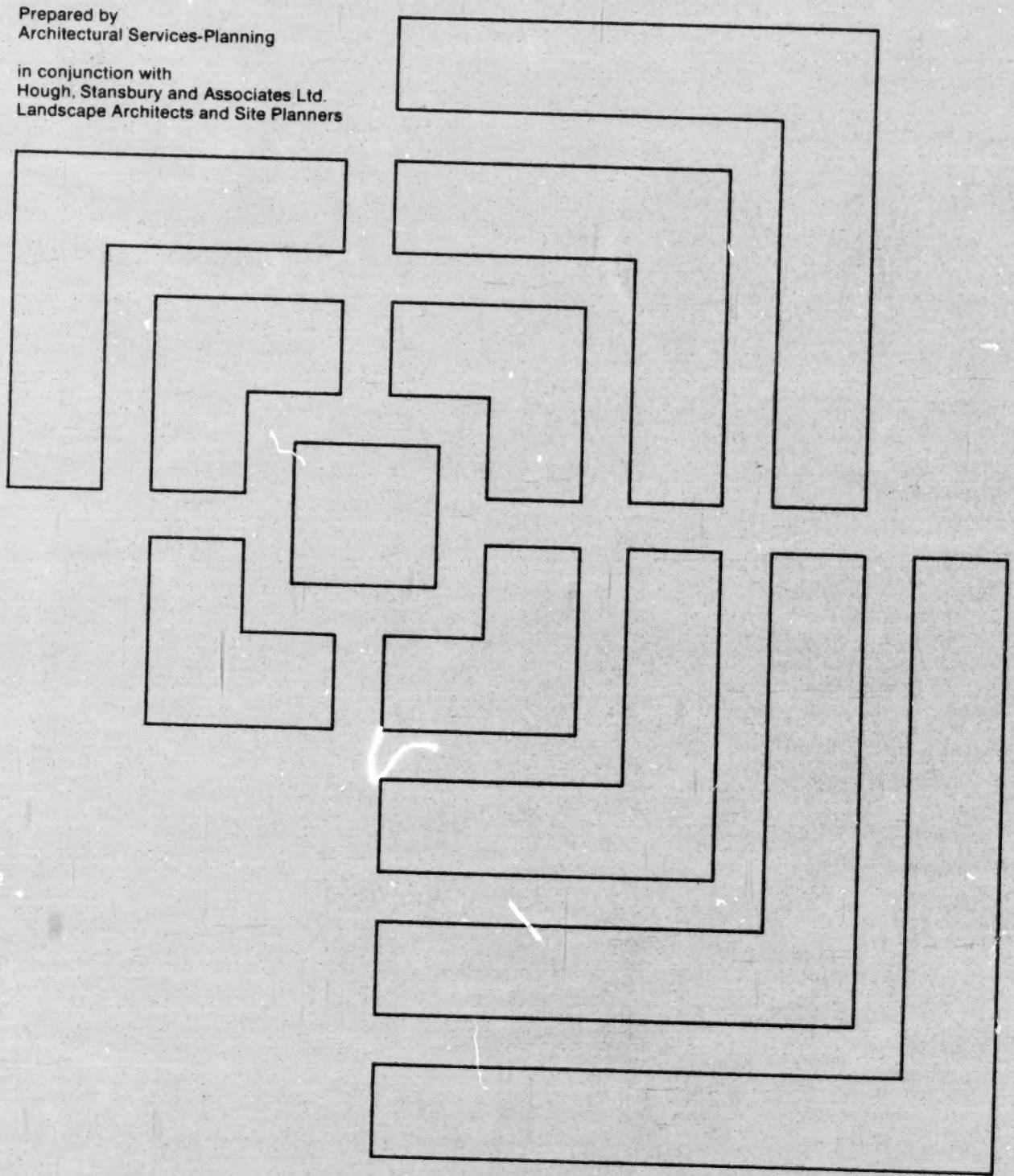
Prepared by
Architectural Services-Planning

in conjunction with
Hough, Stansbury and Associates Ltd.
Landscape Architects and Site Planners



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Introduction

Education today, more than ever before, is attempting to stimulate the curiosity, interest, and imagination of students, and develop programs that recognize the importance of the total environment for their physical and mental development. Consequently, teachers who are making greater use of the outdoors are finding a need for space and outdoor areas that will satisfy the requirements of their programs. Much thought has been given to the form the modern school complex should take, in an attempt to find varied and flexible facilities suitable for contemporary teaching methods. Until recently, however, a similar concern for the school site has been lacking. If the total environment is to be involved in the learning process, the site, like the buildings, must conform to the same planning and design principles.

The objective of this publication is to focus attention on the various aspects of school programs that relate to outdoor use, and to determine how the site might be structured to meet the school's educational and traffic flow requirements. The present text is not intended to provide detailed design solutions to open-space problems, or to recommend expensive landscaping of school grounds; instead, it attempts to determine what facilities are needed to fulfil the objectives of modern education at the least possible cost.

In order to avoid a wide-ranging enquiry into all types of schools, which would be too general to be of any value, this publication concerns itself specifically with the K-6 or junior schools. However, with the exception of certain proposed area requirements, the recommendations contained herein are relevant for K-8 schools, as well.

The subjects discussed are as follows:

1. Integration and organization of community and school facilities in order to reduce land and development costs.

2. Site selection criteria that indicate the type of site best suited to fulfil school needs.

3. Various site uses and their relationship to each other.

4. Site requirements.

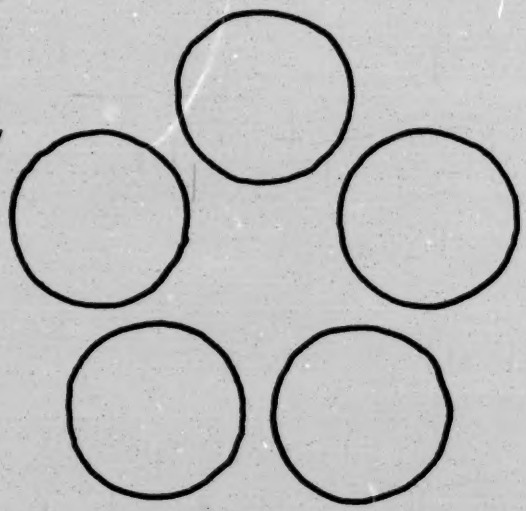
5. Design criteria that illustrate the problems related to school sites including pedestrian and vehicular movement, parking, visual space, lighting, planting, other landscape elements, consideration of factors relating to maintenance, and the design principles involved in the solution of these problems.

General Concepts

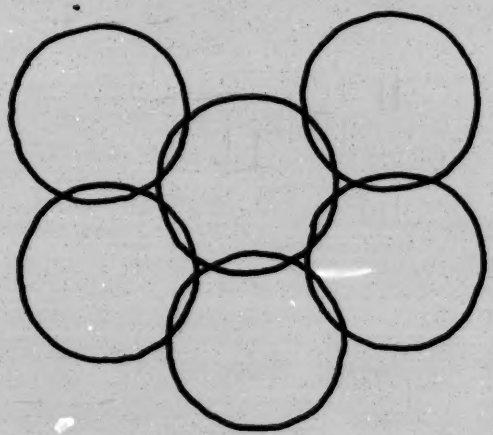
The School and the Community

Until recently, the school's purpose was considered to be the total education of the child. The school alone was responsible for this function; no community agency shared in this activity. As is now recognized, however, the school is merely a part of a large network involving the whole community; it is this network that comprises the total learning environment.

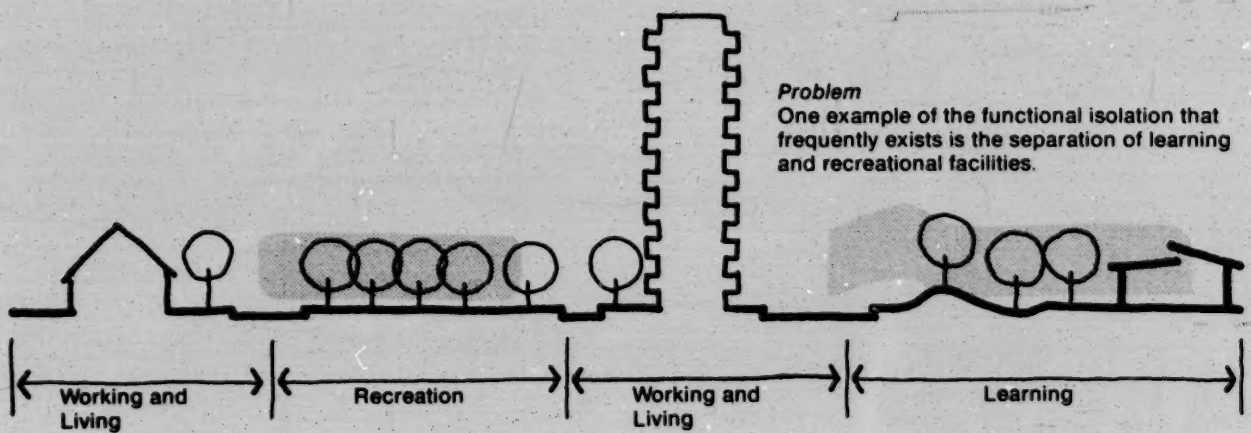
Problem
The separation of the school and community into water-tight compartments is wasteful in terms of land use, and uneconomical because of duplication of services. The concept of the school existing as a separate entity runs counter to contemporary thinking in education, and confers on the school a certain outdated institutional quality.



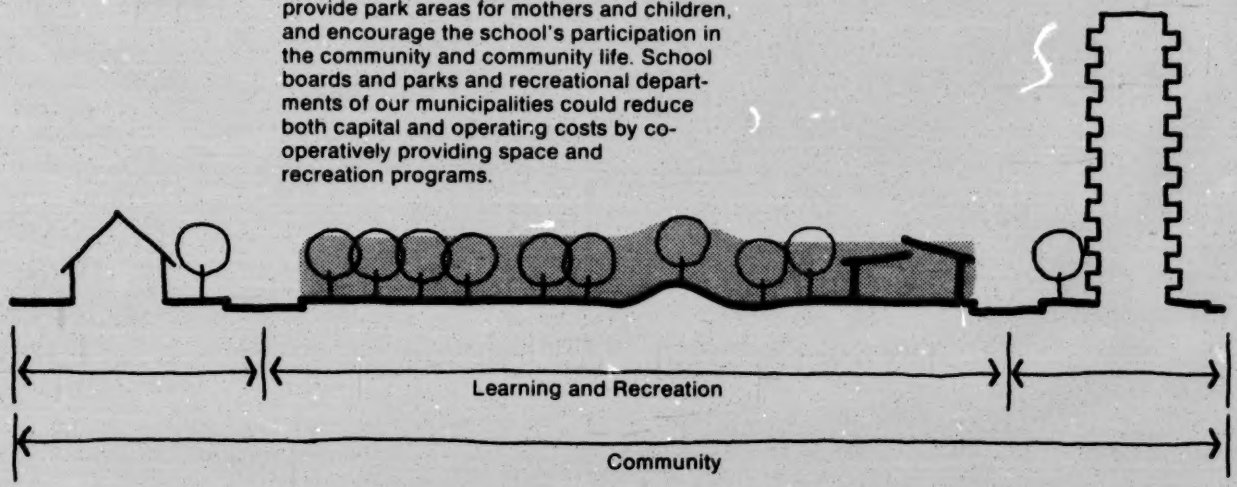
Design Principle
In order to achieve a more effective integration of the school and community, functions and facilities that were formerly separated and isolated from one another should be combined, where possible.



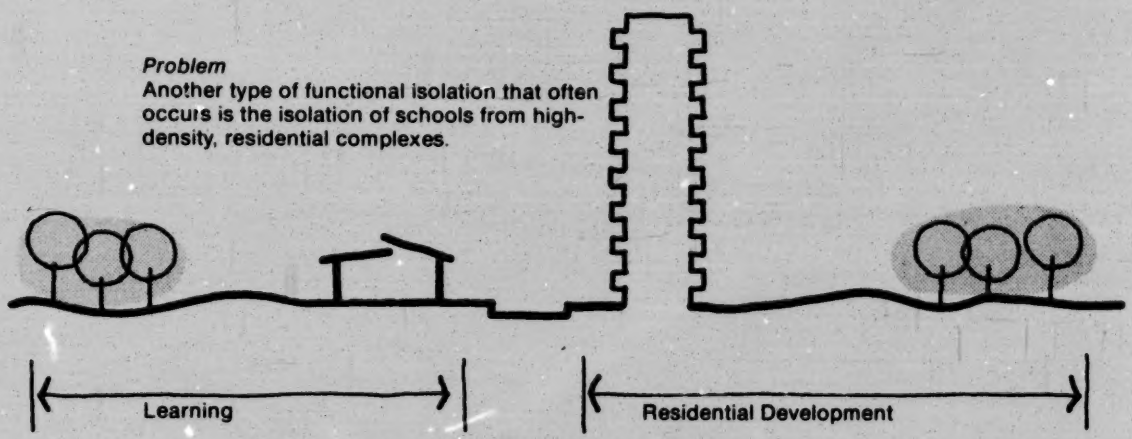
Problem
One example of the functional isolation that frequently exists is the separation of learning and recreational facilities.



Design Principle
The school and the community should pool their resources: the school grounds should be made available to the community, and park areas should be available to the school. Such a policy would ensure an increase in year-round use, and a reduction of land costs and duplication of facilities. It would provide park areas for mothers and children, and encourage the school's participation in the community and community life. School boards and parks and recreational departments of our municipalities could reduce both capital and operating costs by co-operatively providing space and recreation programs.

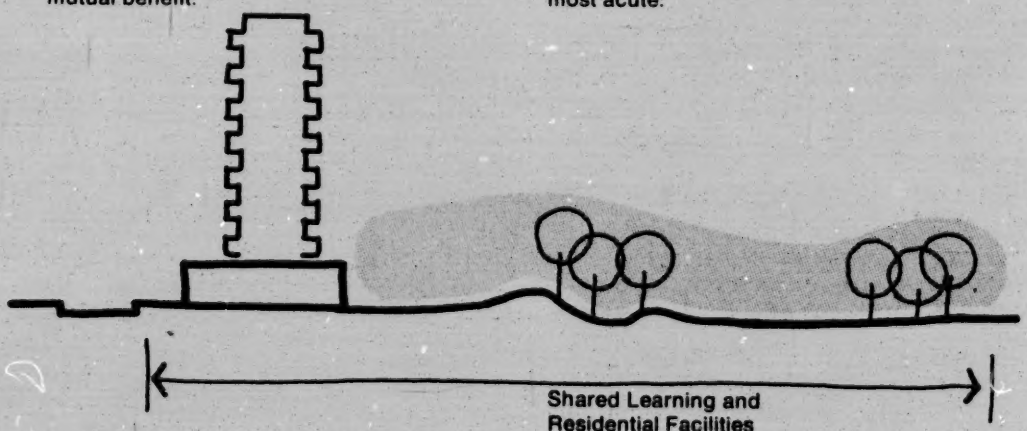


Problem
Another type of functional isolation that often occurs is the isolation of schools from high-density, residential complexes.



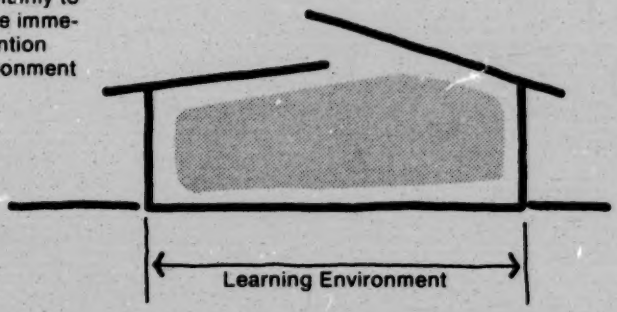
Design Principle
By the sensitive organization of space and function, it would be possible to combine both the indoor and outdoor use of schools and residential complexes for their mutual benefit.

This type of functional integration is particularly advantageous in a highly urbanized context, where the problem of community disintegration and the rising cost of land is most acute.

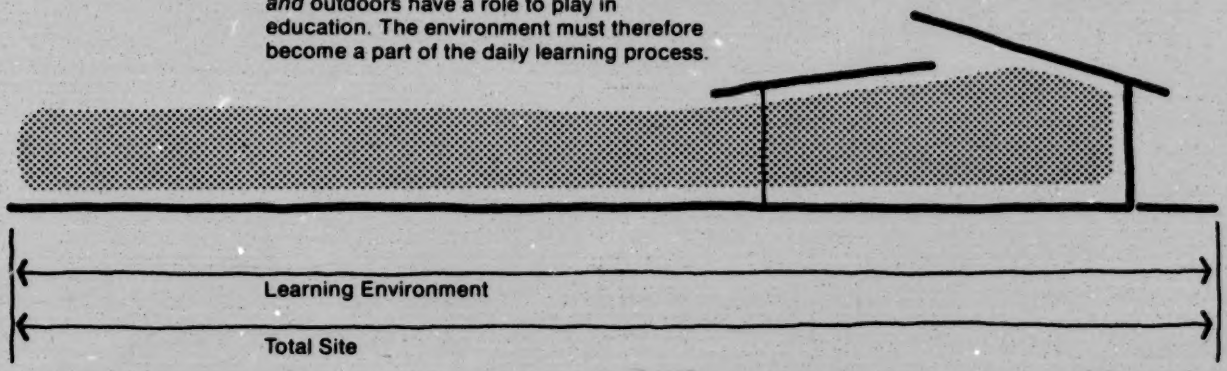


The School and its Site

Problem
With only the occasional field trip, learning activities in the past were confined mainly to the classroom. Without the use of the immediate surroundings, not enough attention could be paid to the role of the environment in the learning process.



Design Principle
Modern thinking views education in the light of the total environment. Both the indoors *and* outdoors have a role to play in education. The environment must therefore become a part of the daily learning process.

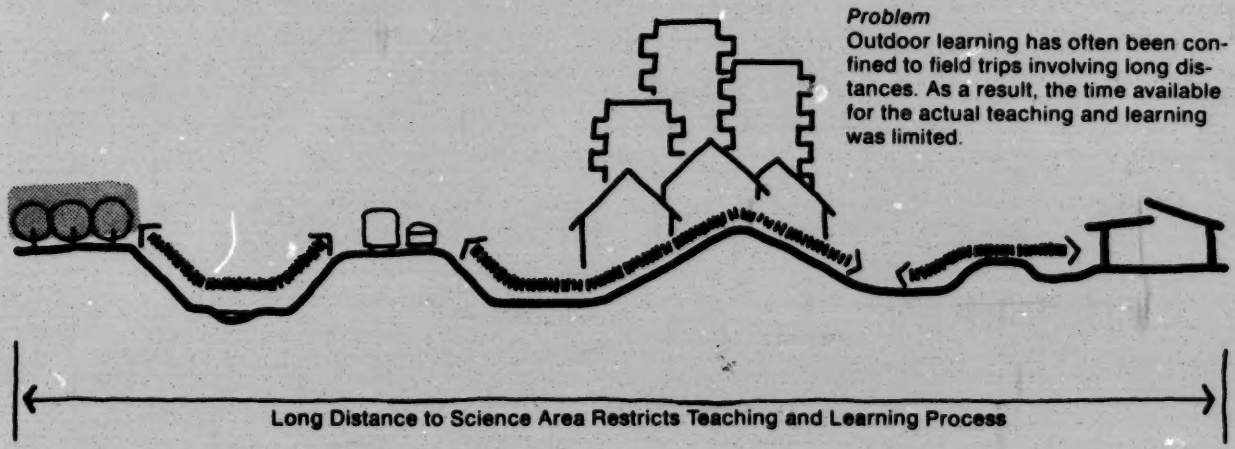


Considerations about Site Selection

In addition to the basic criteria of site selection such as the accessibility of the site location with regard to population, the size of the site, and so forth, other factors that bear on the school's operation as an integral part of the community and that enable better utilization of the outdoors as a learning environment should be considered.

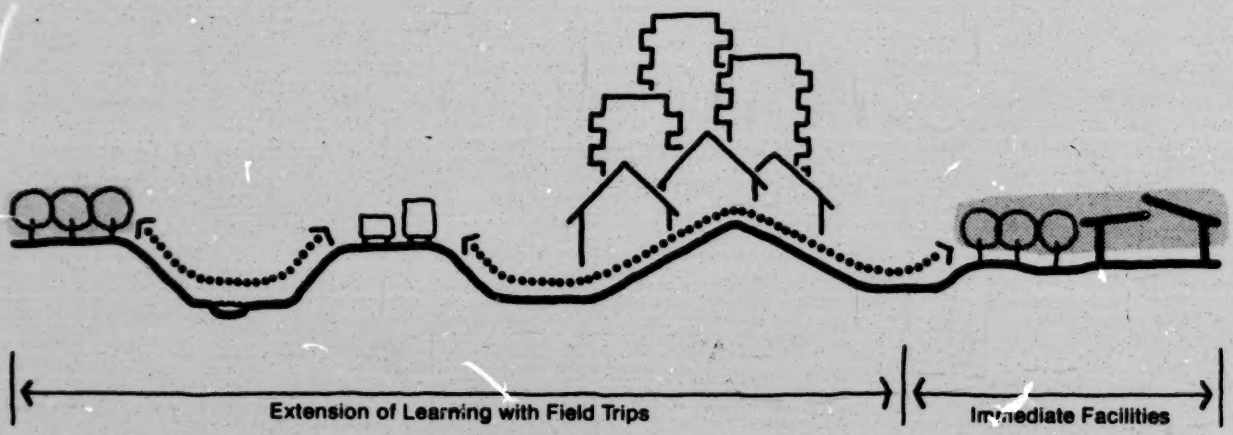
One of the prime factors to be taken into account is the number of young people and adults in the community who will be served by the school. Every community has its own needs and preferences that must be given high priority in the planning process. The existence or non-existence of community facilities such as parks, playing fields, and natural, open areas should play a large part in determining where the school will be built, what it will offer, and what it will require.

Problem
Outdoor learning has often been confined to field trips involving long distances. As a result, the time available for the actual teaching and learning was limited.



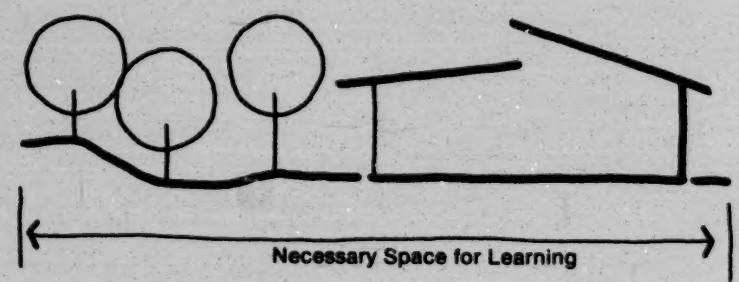
Design Principle

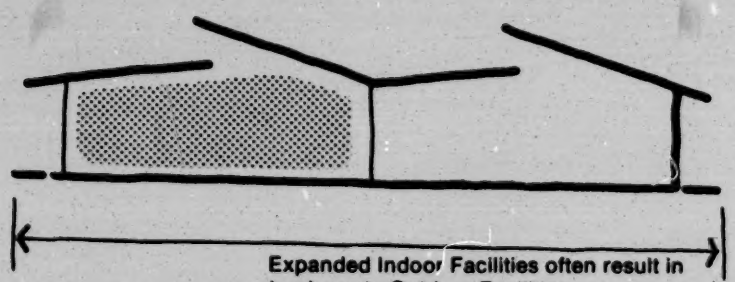
As is shown in the section "The School and the Community", the availability of park space adjacent to the school site increases the potential value for both the community and the school. If the school site selected is adjacent to a park, the acreage needed by the school may be reduced. The proximity of natural areas such as ravines, woodlands, ponds, and so forth, provide an ideal setting for daily exposure of the child to Nature. This type of exposure is especially important in urban areas, since it provides the child with continuing outdoor experiences—reinforced by extended field trips—in familiar surroundings.



Problem

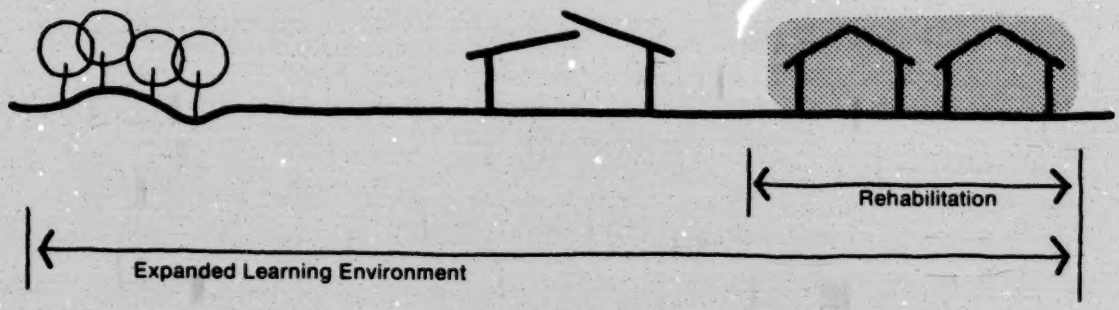
The site's potential for accommodating future expansion should also be considered. Those sections of the site that are of value for learning experiences should be retained. Any future building expansion planned should not diminish or obliterate a natural feature that could enrich the learning experience.



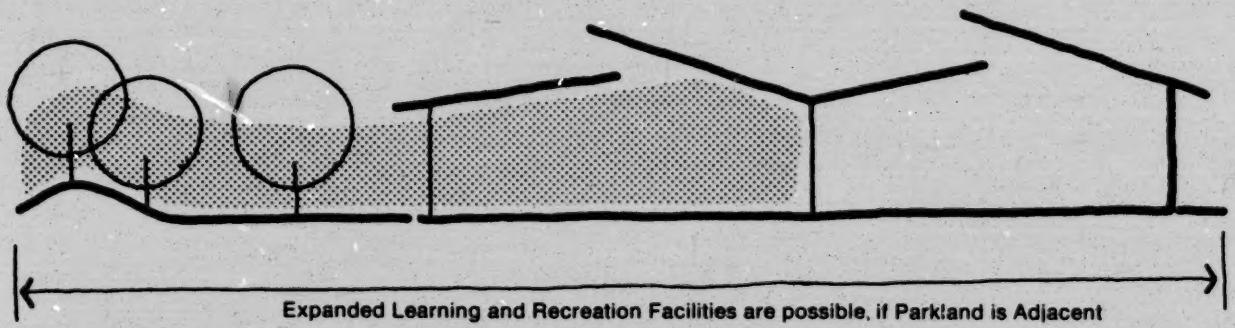


Design Principle
If the space reserved for outdoor learning is already minimal, expansion can be effected by the acquisition of land adjacent to the site.

If land is scarce, the possibility of rehabilitating existing, non-school buildings to serve school needs should be considered.

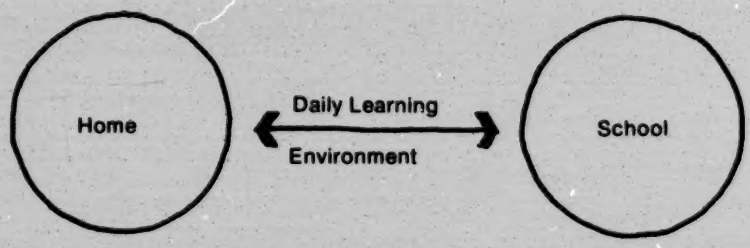


Design Principle
If on-site expansion is a necessity, the problem of adequate outdoor space would be minimized if ample adjoining park space were provided for, by the municipality, during the initial planning of the school.

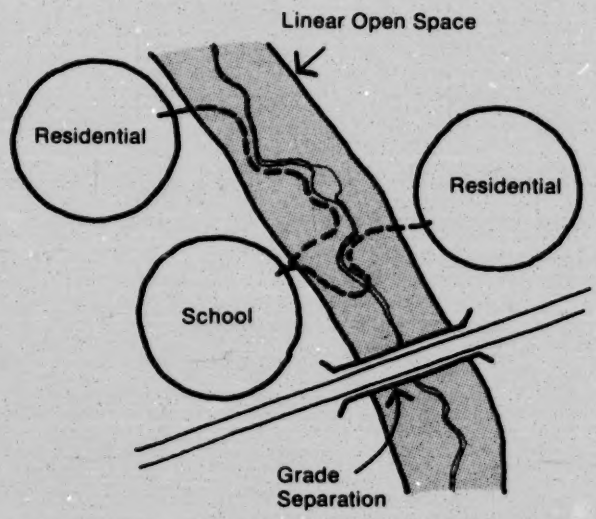


Problem
Another factor to be considered in choosing a site is the route taken by the children to and from school. It is important to take into account the child's safety, and to recognize that every moment and every situation represents a potential learning experience.

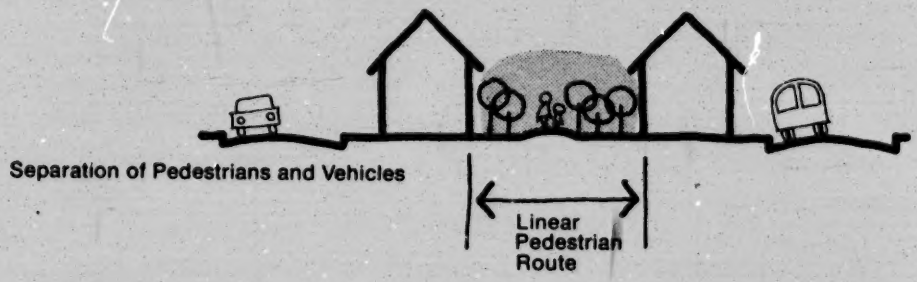
This consideration implies the need for a careful study of the school's location and its physical connections with the community.



Design Principle
The development or use of existing open space—such as natural valleys, areas between subdivisions, schools and residential complexes—as pedestrian routes would offer the child many experiences not possible when walking on a city sidewalk. The development or use of such spaces would also facilitate the separation of vehicular and pedestrian traffic, and thus reduce the possibility of accidents. In conjunction with the local community and its municipal government, school authorities should attempt to implement these principles in older neighbourhoods. Whenever possible, such principles should also be incorporated into new developments, at an early stage.



Design Principle
In built-up sections, where open space does not exist, it may be possible to create pedestrian routes by developing the interior of large city blocks. Rundown back alleys, empty lots, or the space between large buildings could be rehabilitated by means of sidewalks and landscaping. These routes could then be used to link neighbourhood parks to schools.



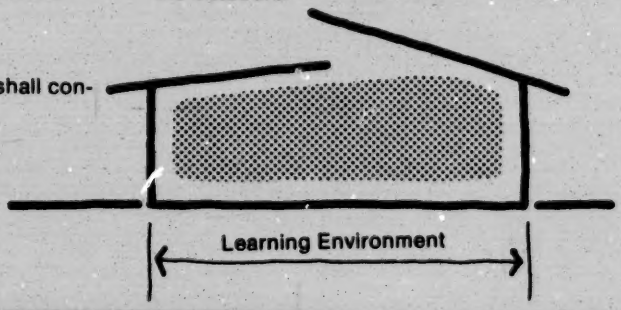
Site Use—Educational

General Considerations

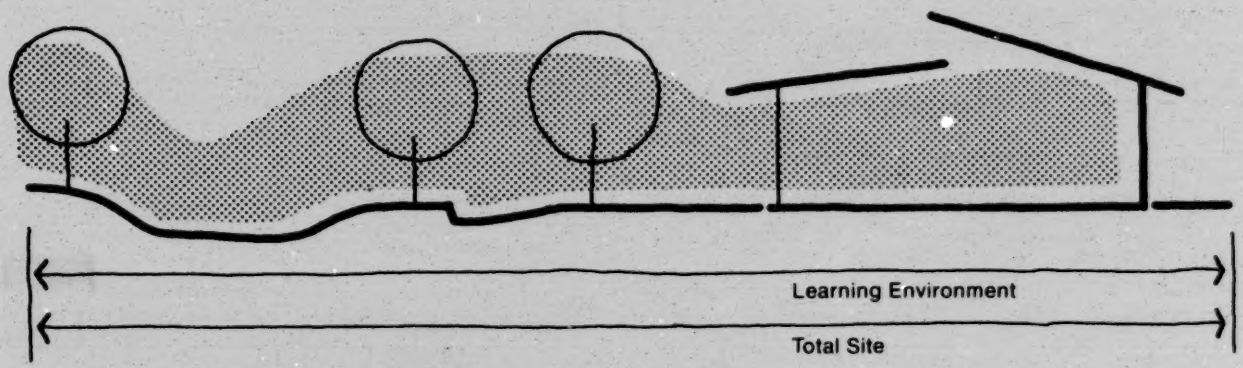
Research now demonstrates that the site, if properly developed and utilized, has unlimited potential for all types of learning. In order to fulfil this potential, the site requires certain areas and specific facilities that were previously considered unnecessary, since the need for them was unrecognized.

Problem
Though, traditionally, teaching was mainly confined to the classroom, educators are now encouraging student discovery and inquiry by the extension of teaching to the outdoors.

Some of these facilities, which we shall consider here, are:
1. The outdoor learning area.
2. The outdoor teaching area.
3. The school garden.
4. Physical education.
5. The creative play area.
6. The kindergarten play area.



Design Principle
An outdoor setting should be provided for all academic subjects and educational activities not possible indoors. Outdoor teaching may take place where the site lends itself naturally to such use, or provision may be made for outdoor learning areas in the initial planning of the school environment.



Learning Facilities—

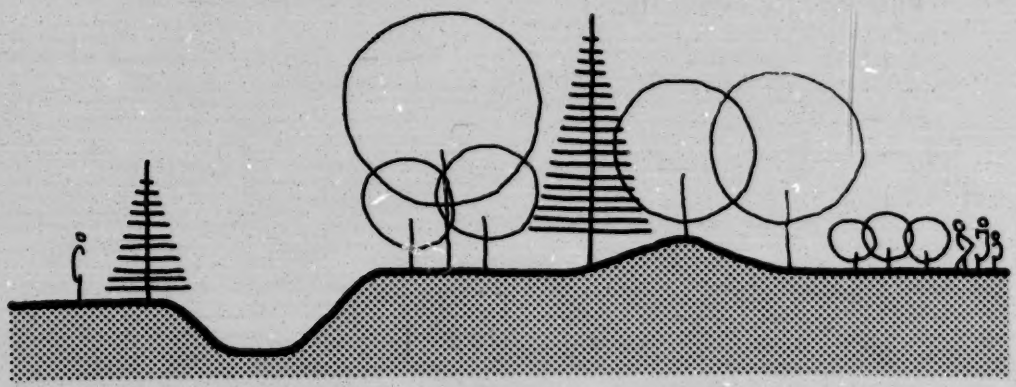
The Outdoor Learning Area

Function or Objectives
1. To supplement the students' classroom experience by providing the opportunity of direct daily contact with nature;
2. To make field trips a more valuable and positive learning experience, and stimulate inquiry by increasing the students' awareness of the local environment;
3. To provide a place where all subjects (not only those directly related to nature) can be studied.
The environment can be of considerable value for the study of literature, music, art, mathematics, and so forth.

Activities
The outdoors is an excellent place for children to learn about Nature, to study its various parts, and to understand the relationship among them. It thus enables children to become involved with the environment as a whole.

The woodland, meadow, and marsh, all provide an opportunity for the study of plants, animals, and insects, and lend themselves to various learning activities: physical exercise, measurement, sketching, writing, discussion, or pure enjoyment.

Requirements
The outdoor learning area may consist of a natural environment such as a meadow, ravine, stream, marsh, or woodland, existing on or adjacent to the school site. If such an area is readily available, it should be exploited, since it is likely to provide the most economical way of incorporating such a facility into the school program. Extreme care should be taken to preserve the area during the construction of the school facilities or other neighbouring developments.

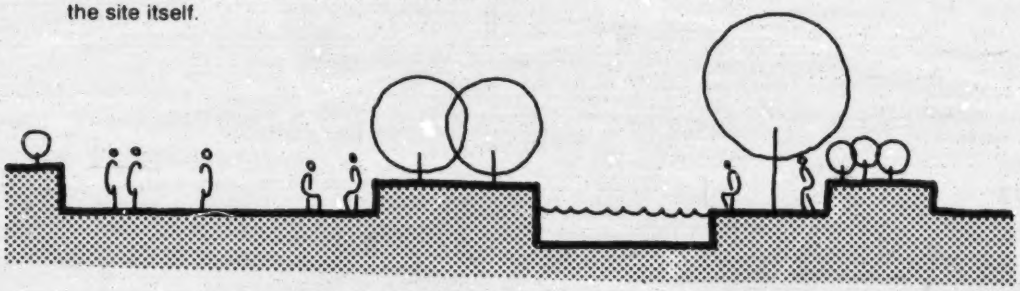


If such surroundings are unavailable, as is often the case in the city, a totally new area may be created as a part of the school's development program. In designing the outdoor area, a number of variables should be taken into account such as the amount of sun and shade available, the degree of exposure or shelter, whether the ground is level or sloping, wet or dry. The site may contain plants, aquatic and terrestrial life, and various geological features and types of soil useful for teaching purposes.

The outdoor area will undoubtedly be scheduled for class use, and will be as much in demand as the general purpose room in a school building. It must therefore be large enough to accommodate a class of 35 students on a continuing basis during the school hours. The minimum size should be approximately ½ acre. However, not all outdoor education is limited to this area, nor to the site itself.

A carefully planned system of traffic and meeting points should be organized for the area.

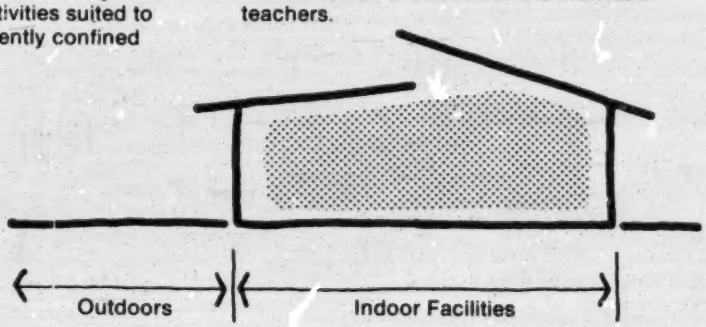
Such an area must be able to withstand heavy pedestrian traffic, which, unless anticipated and carefully planned, could result in a number of maintenance problems.



The Outdoor Teaching Area

Function or Objectives

1. To provide a suitable extension of the classroom into the outdoors, for daily use;
2. To provide space for activities suited to the outdoors that are presently confined to the indoors;
3. To provide an area that is completely flexible to suit the needs of the individual teachers.



Requirements

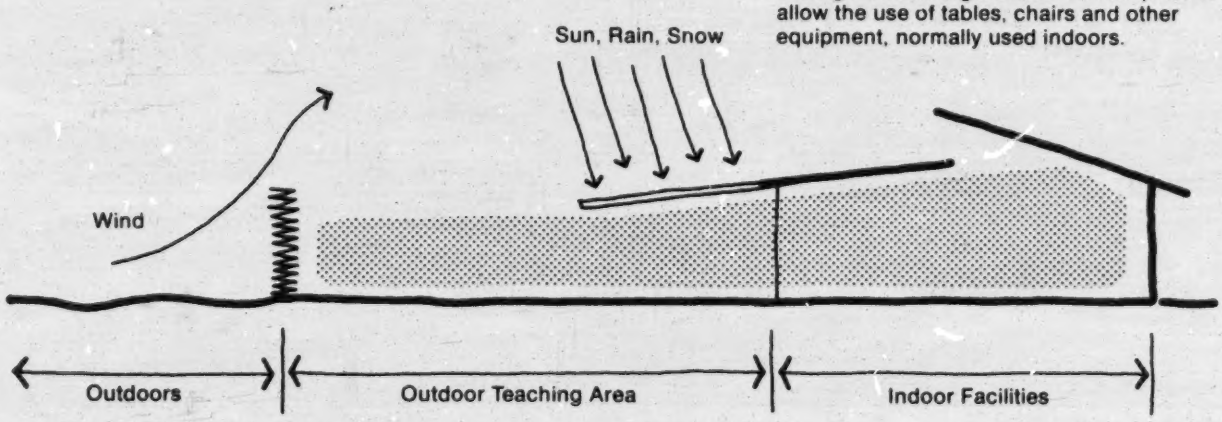
The area should be enclosed in order to provide visual, aural, and physical protection.

As the accompanying diagram illustrates, provision should be made for both exposure to the sun and some protection from the elements.

There should be easy, direct access to indoor facilities such as learning areas, resource centres, washrooms, etc.

Storage space should be provided for materials and equipment.

Paving and drainage should be adequate to allow the use of tables, chairs and other equipment, normally used indoors.



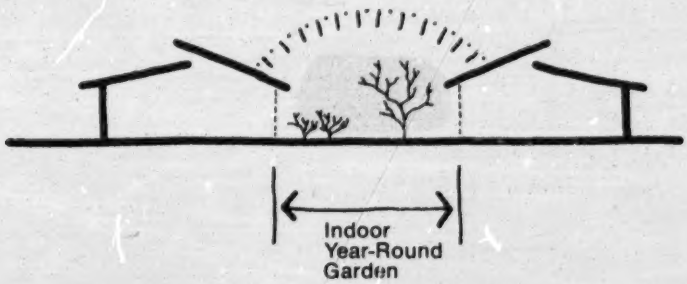
The School Garden

Function or Objectives

Since the school garden would primarily be used at the beginning and end of the growing season each year, the full value of such a facility could be realized through joint, summer, outdoor nature programs sponsored by the school board and the parks' department. This type of combined program would ensure the continuity of the child's outdoor experience, and would also provide the community with additional facilities for outdoor enjoyment.

The addition of a greenhouse could serve several functions:

1. The advantages of a school garden as a teaching tool could be enjoyed all year round;
2. Such an environment would provide a natural, year-round setting that would not only be enjoyable and stimulating, but would also create a highly effective learning area for all subjects of study.

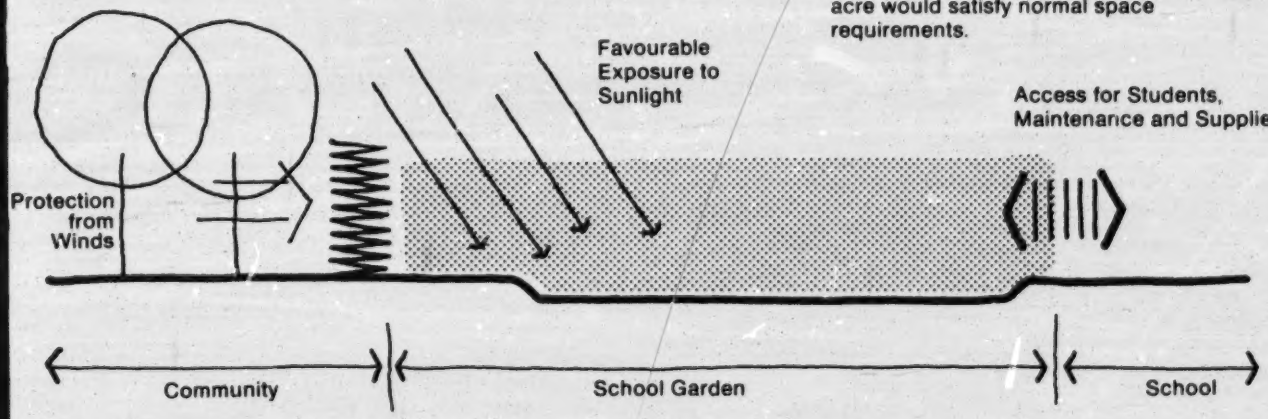


Requirements

The activities designed for the school garden should be part of the overall school activities. The garden should be of easy access to the students.

Convenient access for maintenance purposes is also mandatory. The garden should enjoy a maximum of sunlight and protection from winds, in order to provide optimum growing conditions.

An area of approximately 2,500 sq. ft. or 1/20 acre would satisfy normal space requirements.



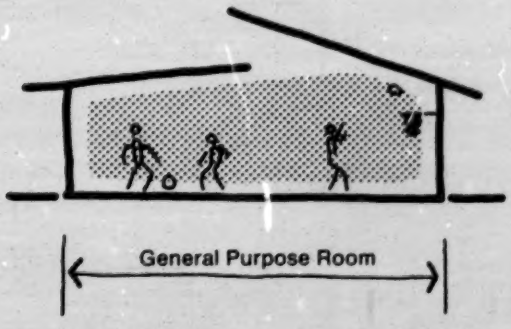
Physical Education

Function or Objectives

The major aim of the physical education program is to promote the physical health of children and develop their skills through a succession of vigorous activities.

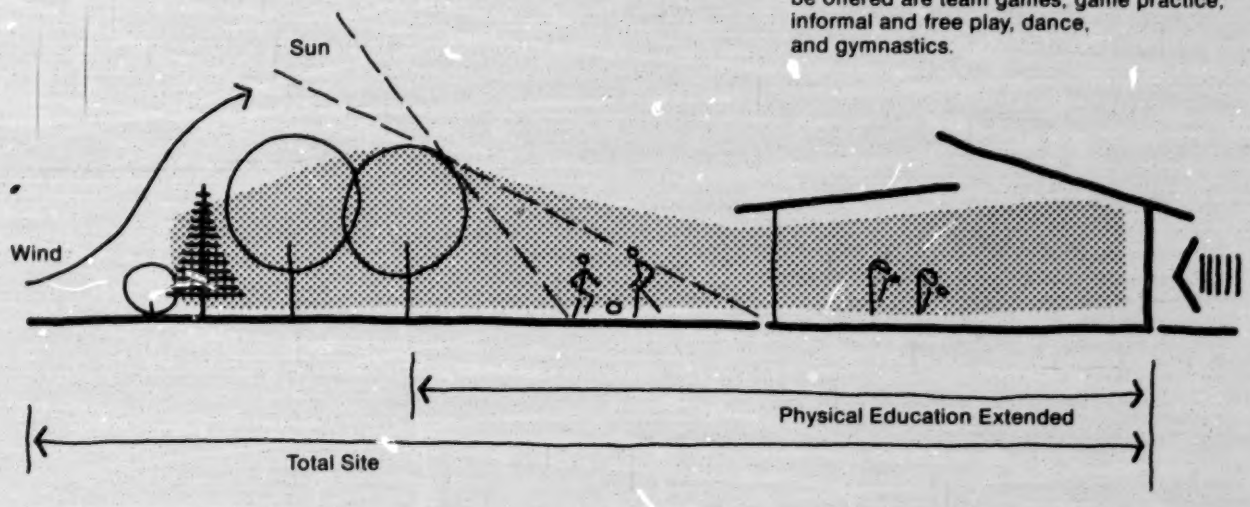
Since the physical education class utilizes both the school's general purpose room and its outdoor areas, the teacher has maximum freedom of choice in all seasons. Community access to open space is also important, since the school's physical education facilities are used by the community during the summer months as well as on weekends, all year long.

Learning results from involvement in many different activities. In this respect, the school's outdoor facilities should not be restricted solely to playing fields, but should allow room for other potentially valid outdoor activities such as creative play.



Activities

Outdoor physical education is an extension of physical education classes held in the building throughout the year. The activities offered depend to a large extent on the teacher's program; these include running, jumping, throwing balls, volleyball, basketball, softball, touch football, and hockey. Other physical education activities that could be offered are team games, game practice, informal and free play, dance, and gymnastics.

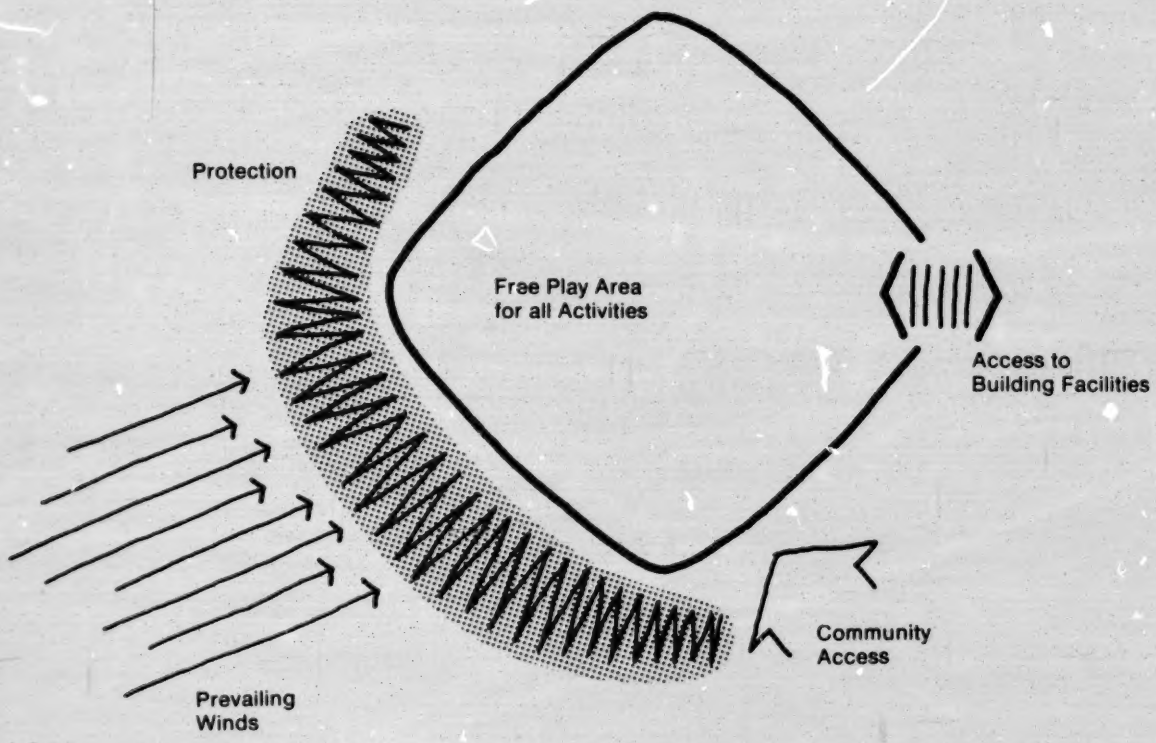


Requirements

Some physical education activities require flat, turfed, well-drained space; others require a flat, paved area.

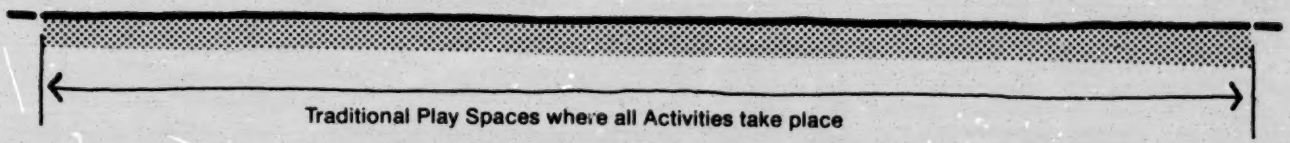
The outdoor area should be large enough to accommodate the school's physical education program, and, if desired, also serve the community. The integration of school and community facilities could be realized on the local level by a joint parks' and recreation program that utilizes available park area. In this way, unnecessary duplication of outdoor facilities could be avoided.

The area should be arranged to provide proper orientation to sunlight throughout the day and year. Protection from prevailing winds is also important. Washroom facilities should be within close range. The possibility of using the area for winter hockey is an important consideration in areas of the province where ice can be maintained satisfactorily throughout the winter.



The Creative Play Area

Function or Objectives
Since play and education are synonymous during a child's early years, the play area should foster the child's curiosity, initiative and creativity. It should be the kind of place that lends itself to a variety of activities: for example, facilities should be provided that enable the child to alter his environment, to build, to change and to arrange things according to his own desires.



Traditional Play Spaces where all Activities take place

Requirements
The size and nature of the area should be varied. Large spaces should be set aside for both group and gross motor activities, and small spaces should be made available for individuals.

Activities should be offered that allow the child to manipulate, arrange, create, and even destroy his own environment.

In order to create constant challenge and inspiration, provision should be made for changing and diversifying activities and materials.

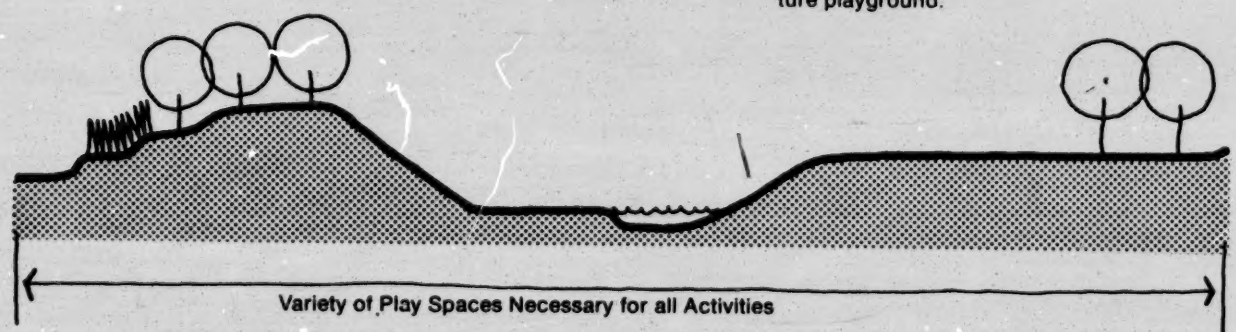
Play should be supervised in order to eliminate obviously dangerous conflicts, while interaction between children should be encouraged.

Winter use of the play area serves an important function. There is scope for a wide variety of activities including making snowmen, throwing snowballs, making and sliding down slopes.

Surfaces should be varied and appropriate to the function: soft, to make falls easier; hard enough for a ball to bounce. Good drainage should be provided where needed.

The area should be designed to obtain a maximum of sunlight, with some shady areas and protection from winds also being provided.

Other amenities that should be provided are: access to washroom facilities; community access; adequate storage space for tools and equipment used in areas such as the adventure playground.



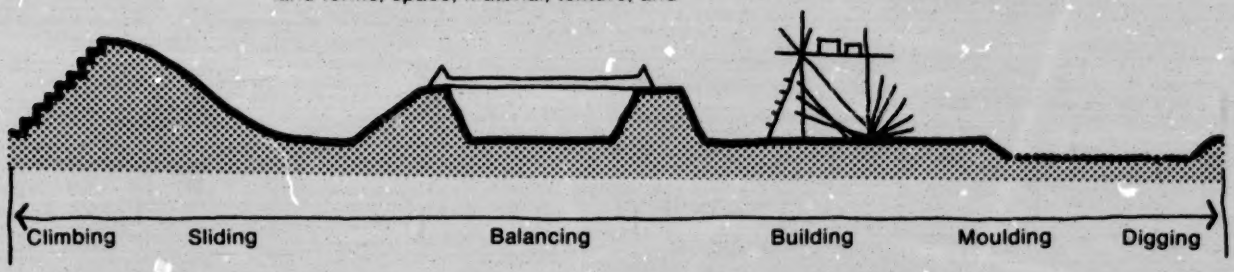
Variety of Play Spaces Necessary for all Activities

Three types of space should be provided: a structured area, an unstructured area, and an adventure playground.

The Structured Area
This type of space provides facilities for climbing, sliding, swinging, digging, moulding, and other activities requiring physical objects as well as space.

The structured area should have a variety of land forms, space, material, texture, and equipment. Land forms should be developed as "play tools" and integrated with the equipment, with emphasis on multi-functional, non-representational design. Natural materials such as slopes, boulders, trees, or streams are more effective as play materials than standard play equipment, and should be incorporated into the play area.

The structured area should be at least ¼ acre in size.

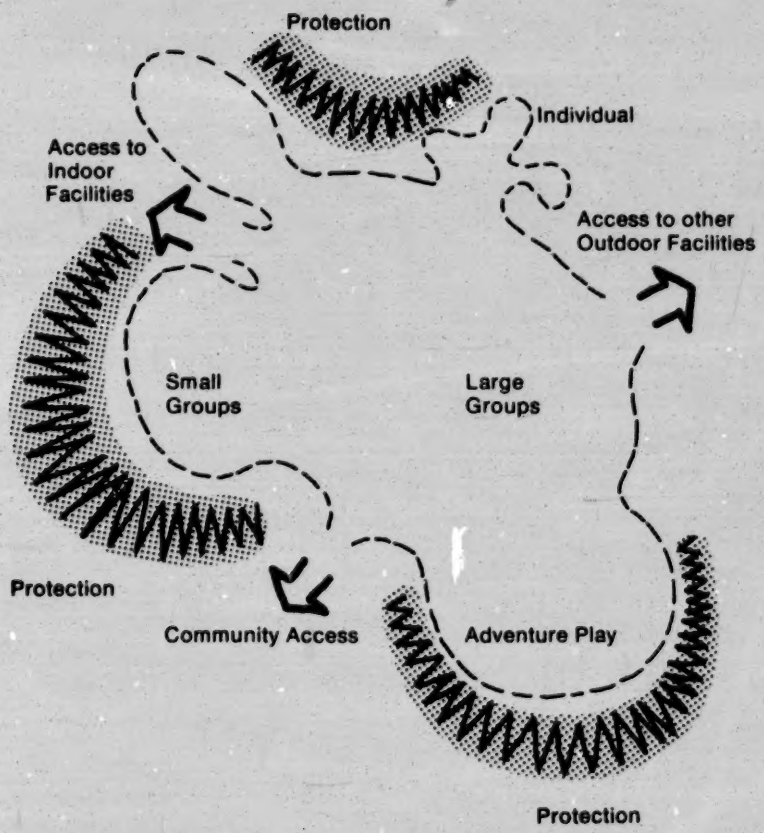


The Unstructured Area
An unstructured play area is required for running, playing ball and tag, as well as for standing around. In winter, it could be used for a variety of winter activities.

Apart from adequate space, this area does not require extensive facilities. Spaces of varying scale should be included to provide for large gatherings, small groups and individual play.

The area should be designed to provide adequate sunlight, with some protected areas being available as well. Any type of land with level ground for informal games such as hopscotch would be suitable.

The area should be at least ¼ acre in size.



The Adventure Playground
In addition to a structured and an unstructured play area, consideration should be given to an adventure playground. The benefit a child derives from manipulating materials and creating his own environment has been demonstrated again and again. Therefore, much of the design of the adventure playground should be left up to the child. He will require a space that offers protection from the elements and perhaps from the community. A constant variety of materials and "junk" should be provided, and a degree of supervision should be maintained in order to ensure the child of a positive learning experience and a relative degree of safety. Materials should be readily available to suit the demand, and should vary in kind and complexity. Storage of equipment is another important factor that should be taken into consideration. All in all, about ¼ acre is required for the adventure playground area.

The Kindergarten Play Area

Function or Objectives
This area affords an environment in which the younger children may learn and develop, without the interference of older children. Despite this isolation, the children have the opportunity of contact and integration with the remainder of the school.

Requirements
The area should respond to all of the criteria suggested for the creative play area (see preceding section).

It should provide a play area for the younger children, where special attention can be given to those children who need it, free from outside interference.

It should be a suitable extension of the indoor environment, but should be protected against the elements.

The area should be completely flexible to suit the teacher's particular teaching methods and program. Supervision should be unobtrusive.

The area should be oriented towards the sun. Some enclosure and screening are necessary to give protection against the elements, and provide an environment in scale with the child's own microcosm.

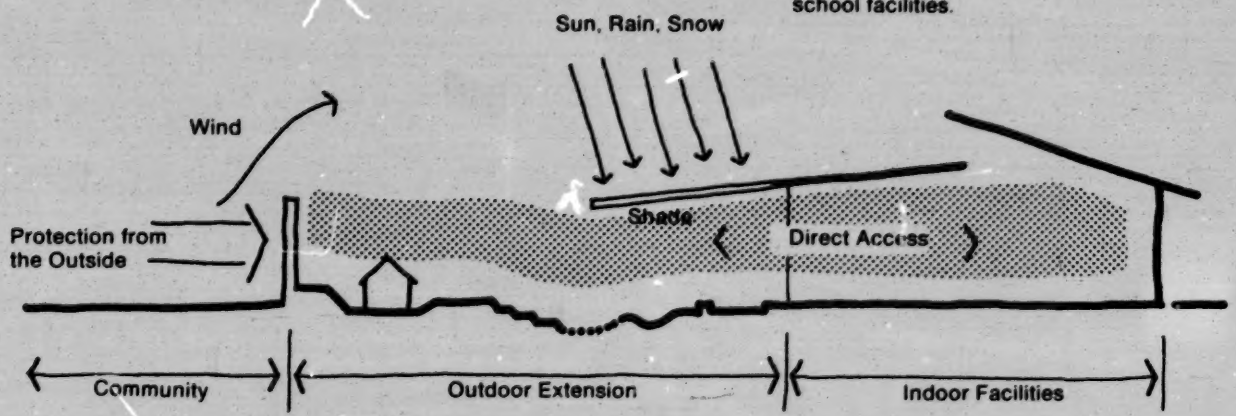
The kindergarten play area should be twice the size of the indoor facilities.

Direct access should be available to indoor facilities.

Ground surfaces should be suitable for the purposes required. Good drainage should be provided.

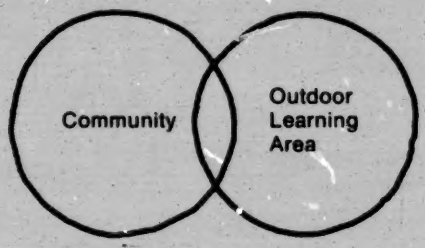
Storage space should be available for materials and equipment.

The area should provide both privacy from and direct access to other school facilities.

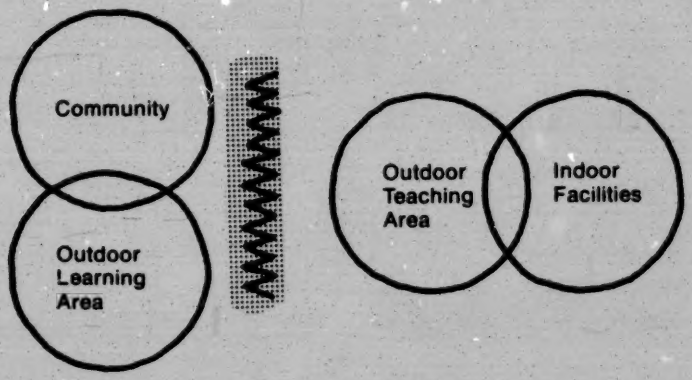


Functional Relationships

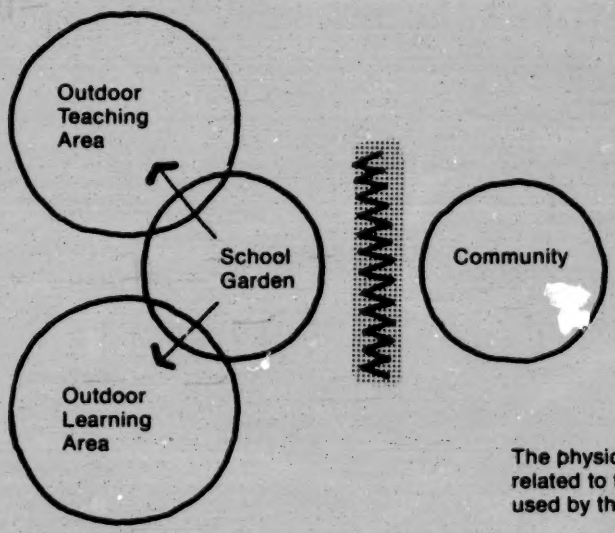
The resources of the outdoor learning area should be shared with the community.



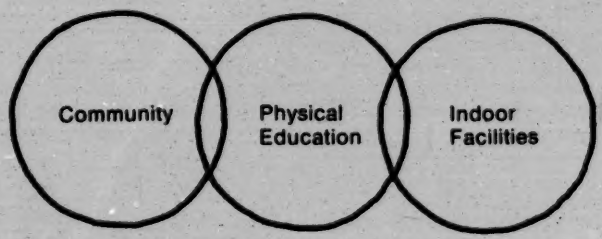
The outdoor teaching area is directly related to the indoor facilities, and may require visual and aural screening.



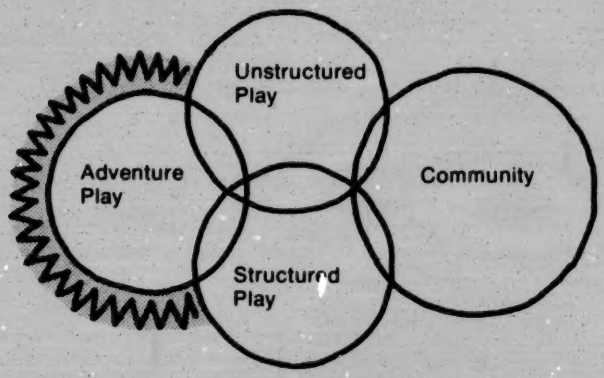
The school garden should be connected with both the outdoor teaching area and the outdoor learning area, but partially isolated from the community.



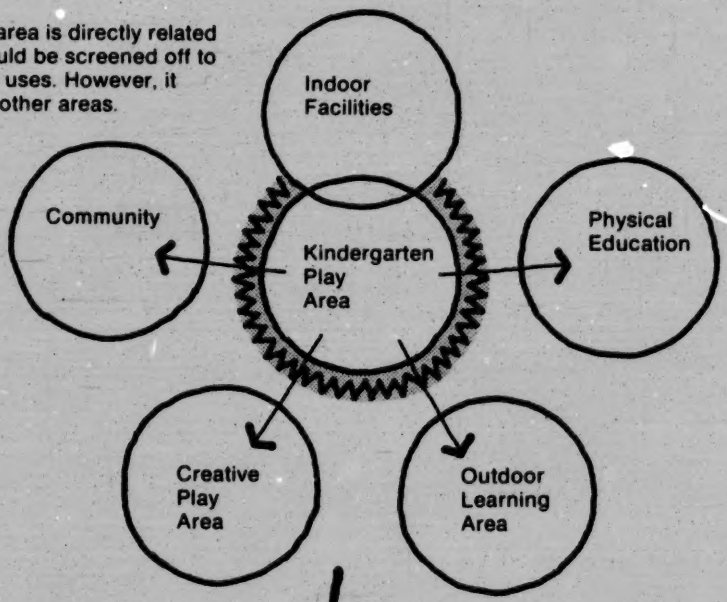
The physical education facilities are directly related to the indoor facilities, and are also used by the community.



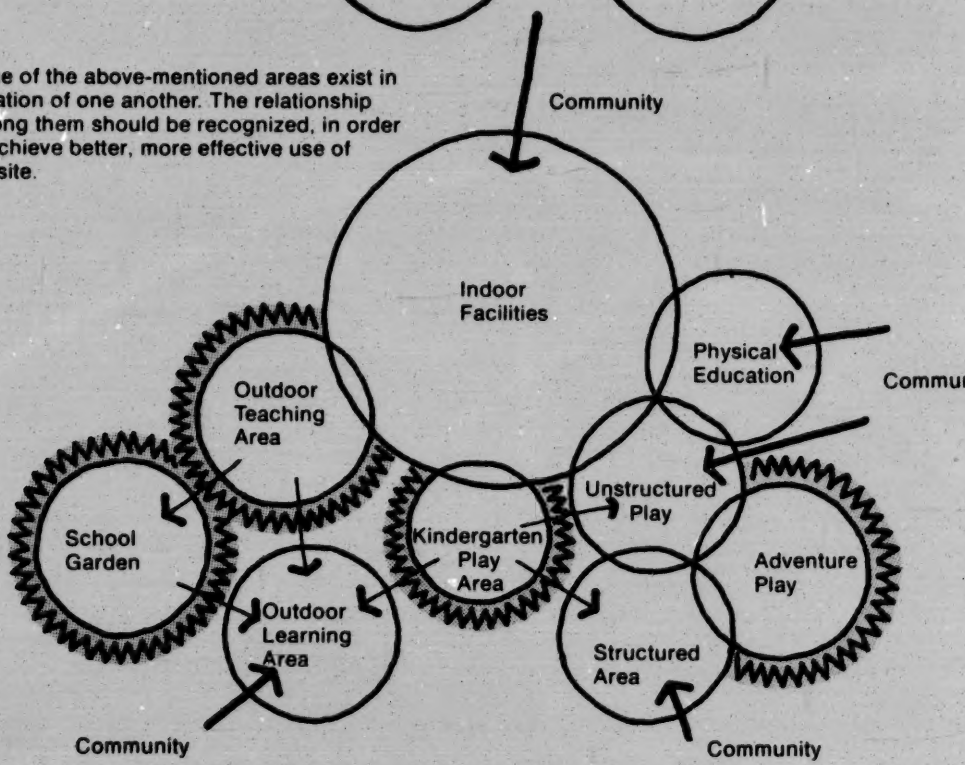
The foregoing three types of creative play areas should be connected to each other. The adventure playground should be somewhat removed and screened off from the community, because of the high noise levels generated in this area.



The kindergarten play area is directly related to the indoors and should be screened off to protect it from all other uses. However, it should have access to other areas.



None of the above-mentioned areas exist in isolation of one another. The relationship among them should be recognized, in order to achieve better, more effective use of the site.



Site Use—Pedestrian and Vehicular Movement

General Considerations

A conflict often arises between various types of vehicular and pedestrian movement: for example, at the entrance to the parking area. Such problems become more serious because of the presence of young children.

In many cases, school boards have attempted to resolve such conflicts by eliminating certain facilities from the site such as bus turn-arounds. However, the problem is not resolved in this manner, but only relocated.

This section of the *Site* publication, therefore, is devoted to certain basic design principles aimed at eliminating traffic problems on the site, before they occur.

Each of the following activities is analyzed in terms of its own requirements. Then, all of the activities, including the educational ones, are related to each other in an overall, diagrammatic form. These activities include: pedestrian, bicycle, bus, car, and service vehicle movement; bicycle parking; the unloading and short-term and long-term parking of vehicles.

Function or Objectives

1. To provide convenient movement both to and around the site with a maximum of safety by separating non-compatible traffic systems;
2. To provide opportunities for social interchange among children of varying ages, and between students and staff, where desirable;
3. To provide community access, while fulfilling the school's own requirements;
4. To provide unification of the various school facilities.

Requirements

Pedestrian Traffic

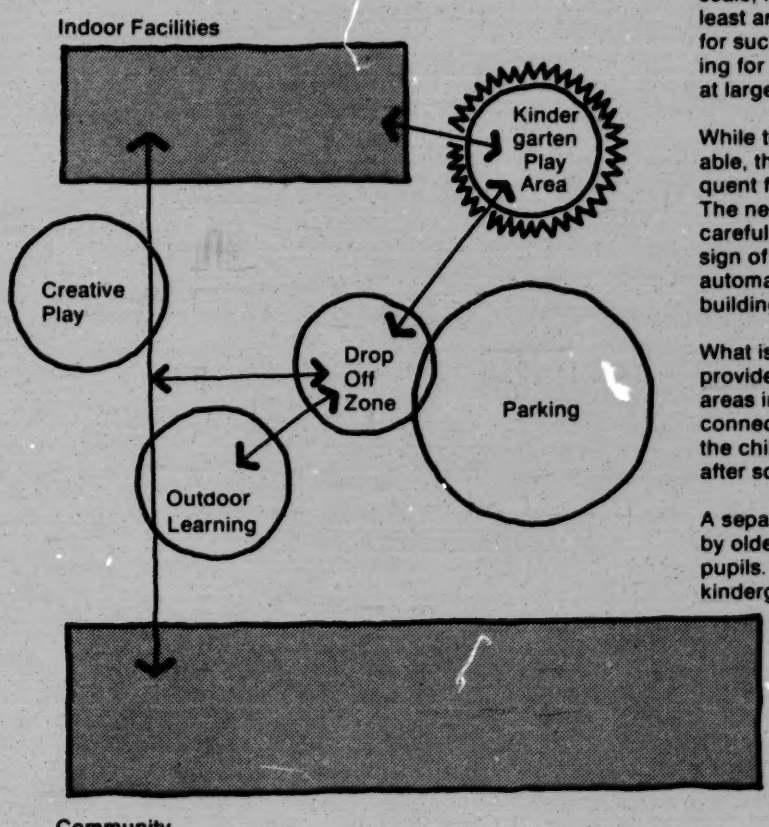
Walkways and paths should conform to natural, convenient lines of travel from street and parking areas to school buildings. They should be able to accommodate heavy traffic during periods of peak travel such as the arrival and departure of the students, and should serve community needs, as well.

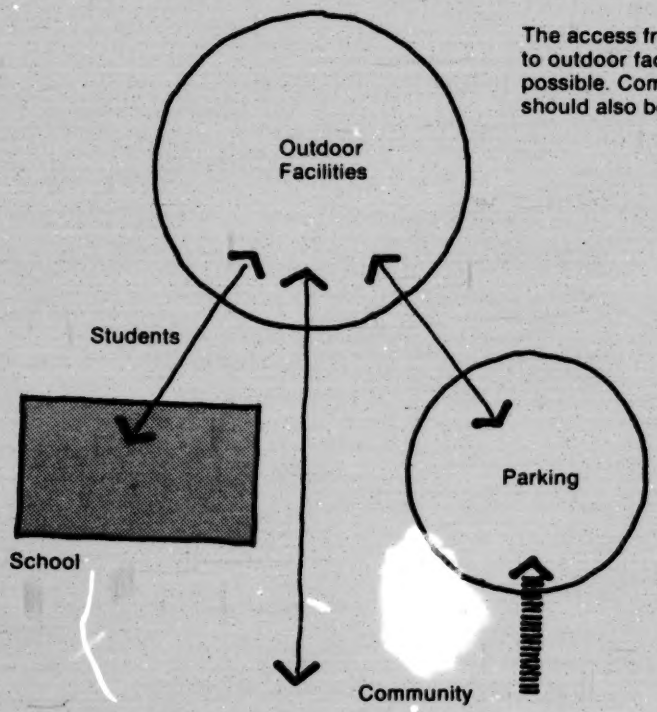
Despite the fact that the traditional "main entrance" has always been the largest in scale, it has, in effect, accommodated the least amount of traffic. The only justification for such an entrance was its symbolic meaning for both the visitor and the community at large.

While the entrance in itself is not undesirable, the conditions it imposes on subsequent frontage development are restrictive. The need for such entrances should be carefully evaluated in the planning and design of school facilities; they should not be automatically included in the building program.

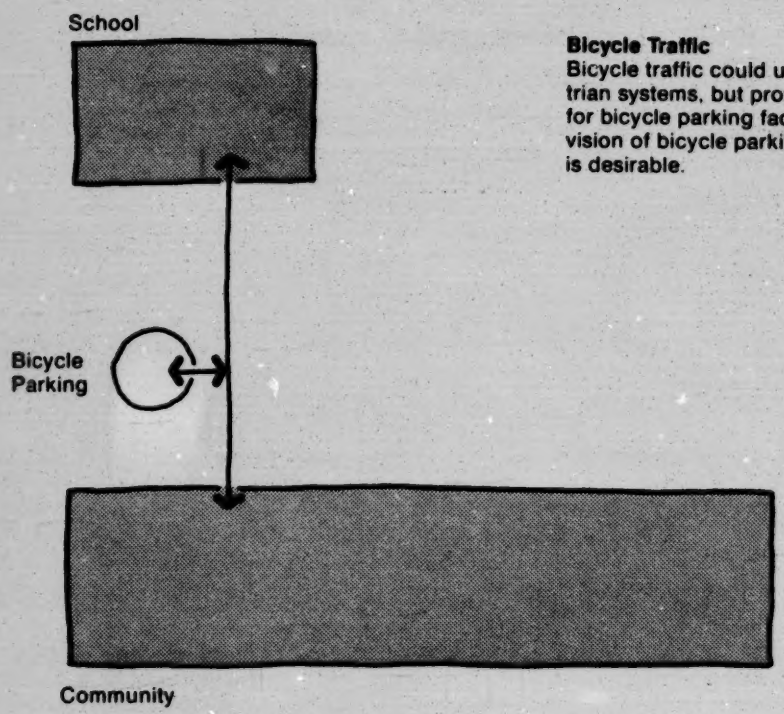
What is required is a student entrance that provides a central connection to all inner areas in use. Such an entrance should be connected to the outdoor play area in which the children congregate before and after school.

A separate entrance, free from interference by older children, is required for kindergarten pupils. This entrance could be linked with the kindergarten play area.

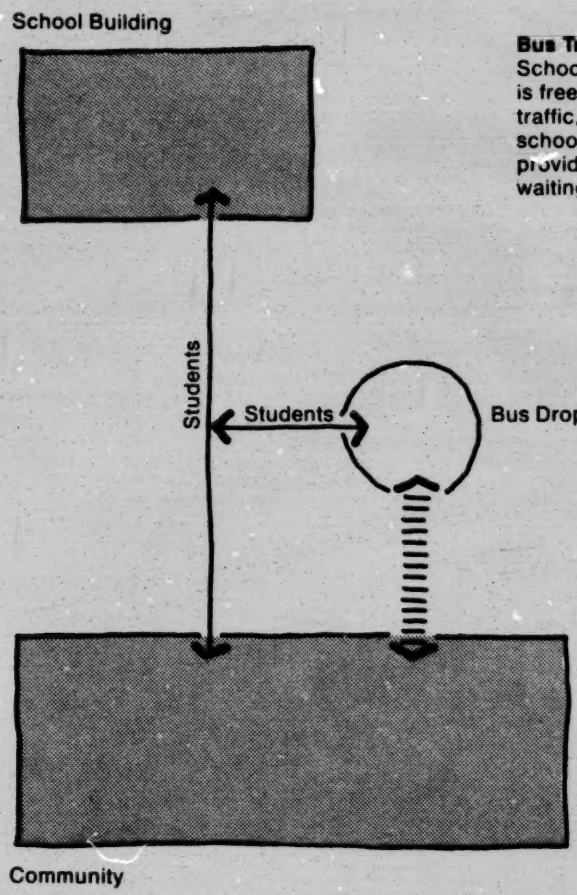




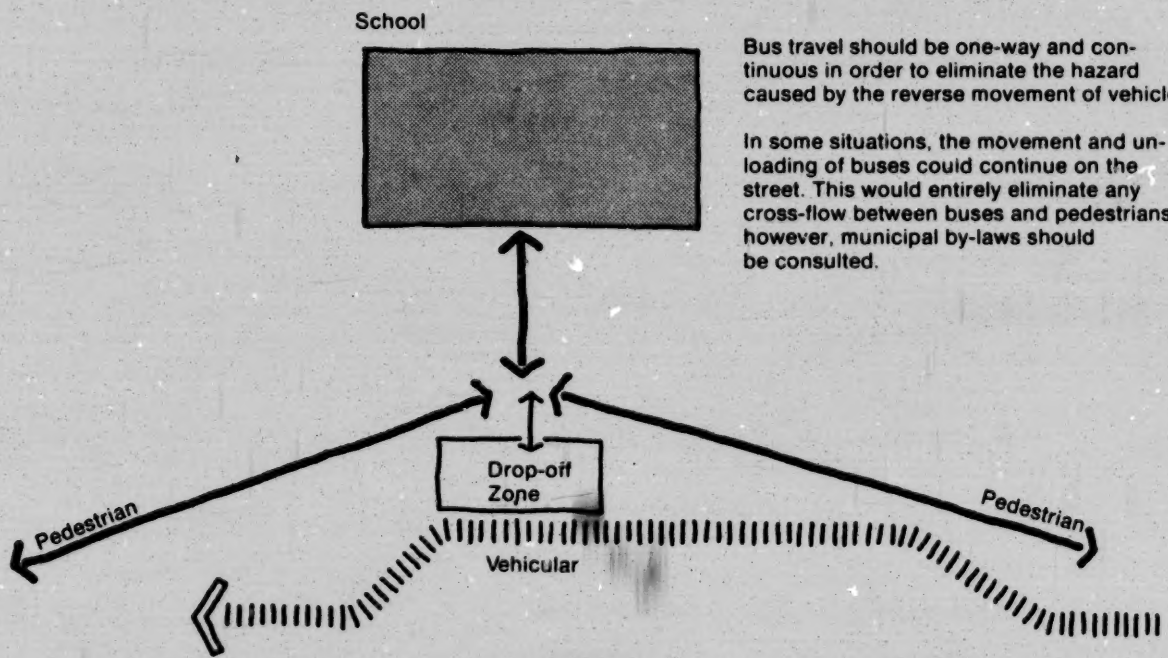
The access from buildings and parking areas to outdoor facilities should be as direct as possible. Community use of the school site should also be encouraged.



Bicycle Traffic
Bicycle traffic could utilize existing pedestrian systems, but provision should be made for bicycle parking facilities. Visual supervision of bicycle parking from the school is desirable.



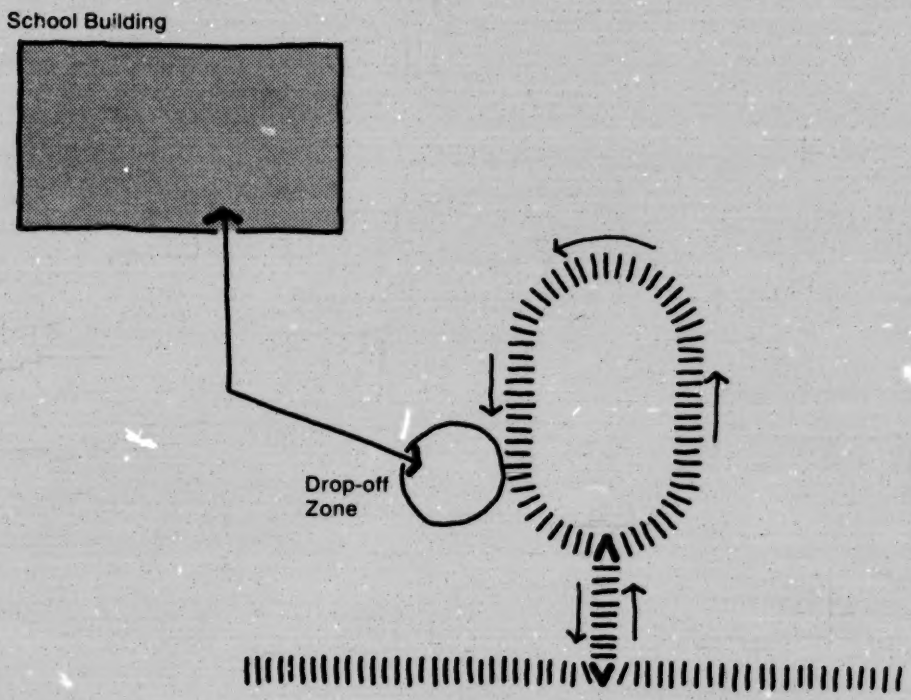
Bus Traffic
School buses require a "drop-off" zone that is free from the interference of other types of traffic, and that provides direct access to the school. The zone should be large enough to provide a "stop-over" space for waiting vehicles.



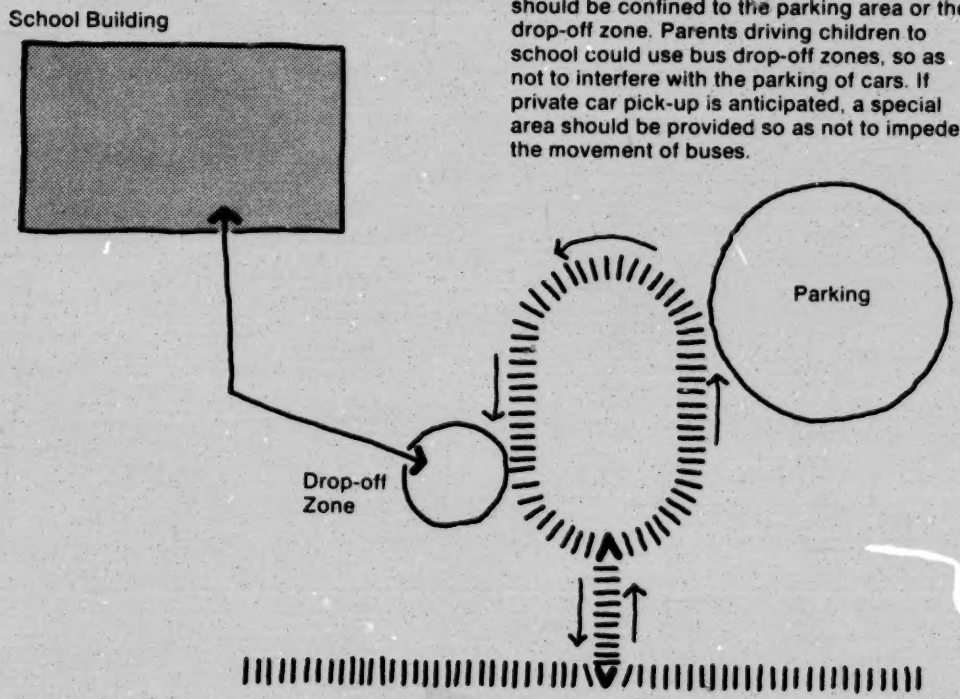
Bus travel should be one-way and continuous in order to eliminate the hazard caused by the reverse movement of vehicles.

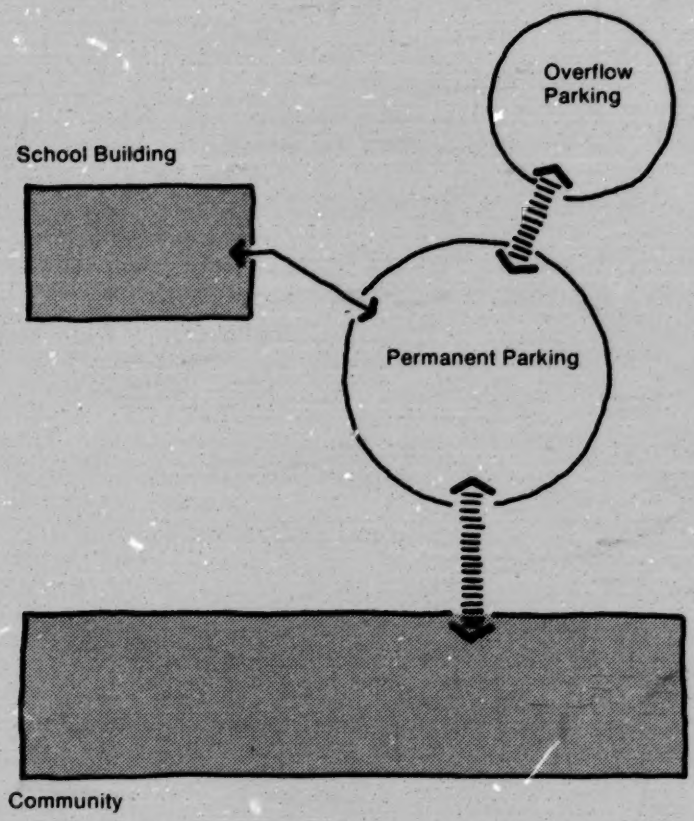
In some situations, the movement and unloading of buses could continue on the street. This would entirely eliminate any cross-flow between buses and pedestrians; however, municipal by-laws should be consulted.

In other situations, the movement and unloading of buses might have to be accommodated on the school site. A two-way entrance/exit should be provided, with all subsequent movement being one-way. This would limit pedestrian/vehicular conflict to one point. Such movement could then be supervised by safety patrol personnel, if necessary.

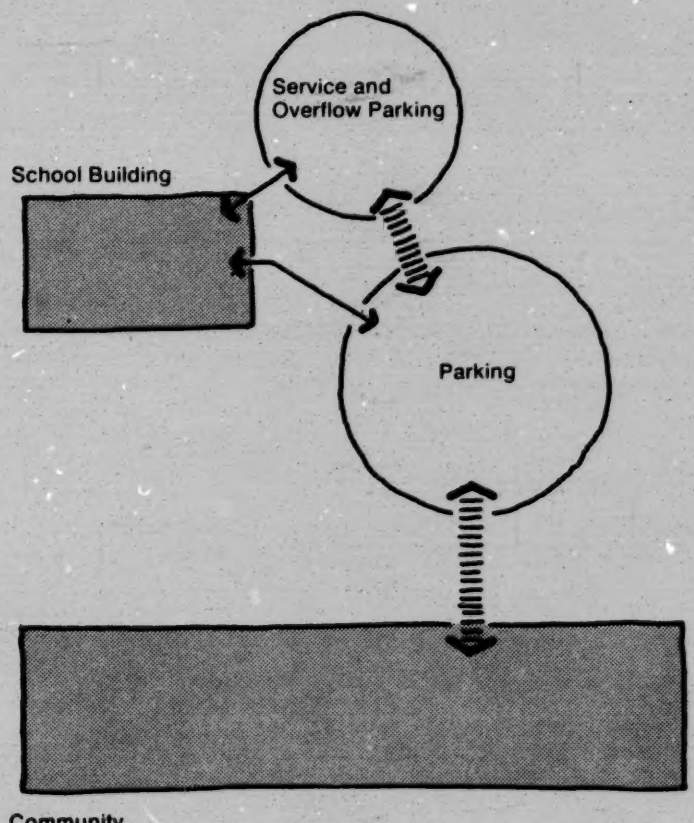


Car Traffic
Car traffic should be well separated from pedestrian traffic. All cars should use the single entrance provided for buses, for access to the site; subsequent movement should be confined to the parking area or the drop-off zone. Parents driving children to school could use bus drop-off zones, so as not to interfere with the parking of cars. If private car pick-up is anticipated, a special area should be provided so as not to impede the movement of buses.





Parking facilities should provide convenient access to the school building. The number of allowable parking spaces is normally governed by local zoning by-laws. One car space per staff member is usually insufficient; an increase in professional and parental visits during school hours has created the need for additional parking facilities. Allowance for overflow parking should be made for community events that involve the school. Where possible, such an overflow should be directly related to *permanent* parking facilities. Unoccupied, paved areas should be used for this purpose; however, unpaved, level areas of the site could also be used to accommodate the overflow.



Service Vehicles

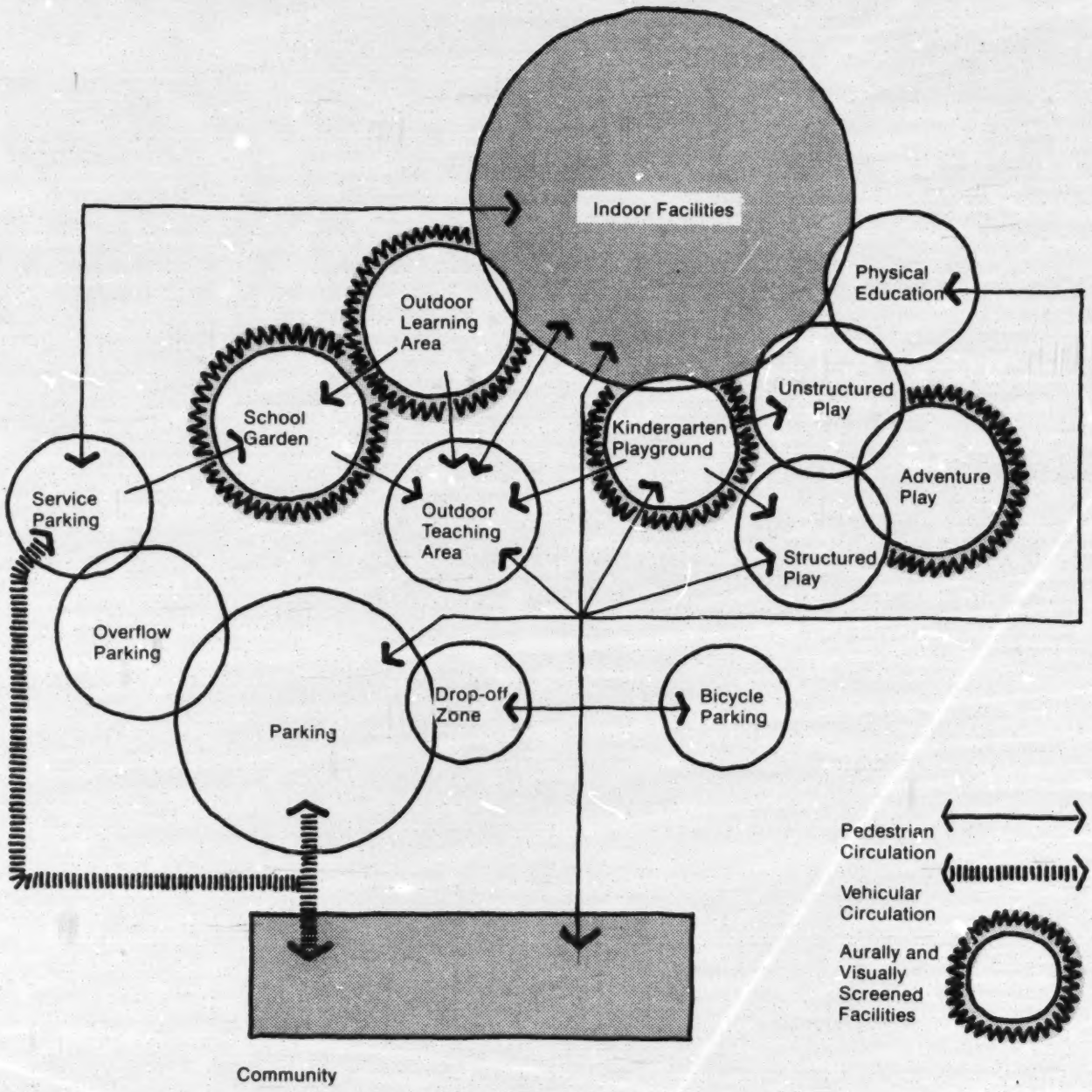
Service vehicles do not require an extensive traffic system, but do require direct access to the school building. If maintenance vehicles are to be accommodated on the site, designated long-term parking space is required. In some situations, the service area and overflow parking area may even be combined into one.

In planning service vehicle parking and access to school buildings, care must be taken to avoid creating hazards for children or conflict with other site uses.

Functional Relationships

Summary of the Basic Relationships of the Various Traffic Systems.

1. Pedestrian and vehicular traffic systems are separate.
2. All vehicular access occurs at one point, with subsequent movement to the drop-off zone, parking area and service areas.
3. The community has access to school buildings and outdoor, communal facilities via functional areas such as parking areas and pedestrian/vehicular traffic systems.
4. The community does not have access during school hours to those facilities developed strictly for school use, such as the outdoor teaching space, the school garden, or the kindergarten play area (unless properly supervised).
5. The school requires its own traffic system to facilitate fast, direct movement from indoor facilities to outdoor areas. This traffic system would also be used by students arriving at school.
6. Service vehicles have direct access to the school buildings and the school garden. Under some circumstances, service access may be required to the outdoor learning area, as well.
7. Pathways can be constructed through the creative play area and outdoor learning area, in order to encourage involvement in those activities.



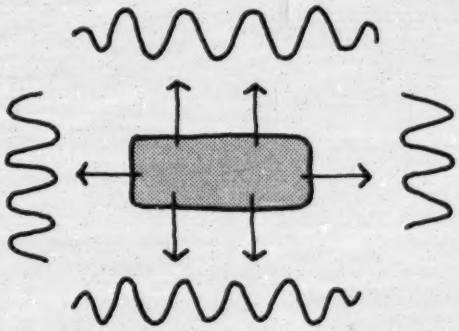
Site Use—Visual

General Considerations

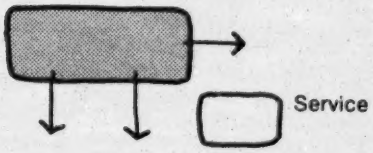
The visual appearance of the school, school site, and facilities should be very carefully considered, since what is pleasing and attractive to the adult community is seldom interesting or stimulating for the child. However, by the sensitive organization of space and judicious use of materials, it should be possible to satisfy both community and child.

Visual Criteria

Classrooms and staff areas should be situated so as to provide as pleasant a view as possible.

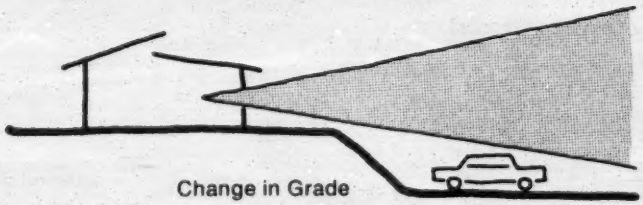


Parking lots and service areas should not obstruct the view of the school from the outside, nor the view from within the school.

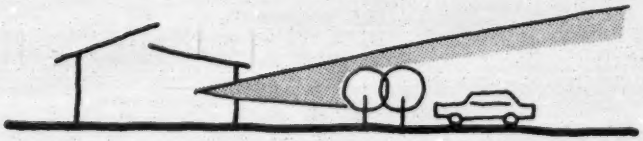


Sometimes certain peculiarities or restrictions of the site may cause service areas to intrude into the view from the school or of the site. In such cases, screening may be effected by changes of level, by grading, or by planting.

Screening with Earth

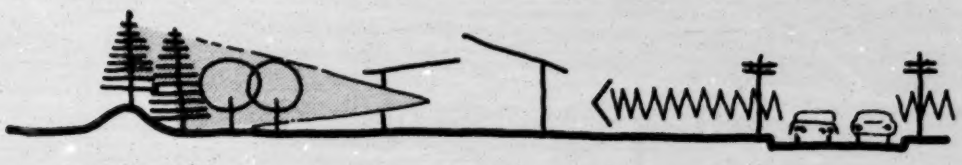


Change in Grade

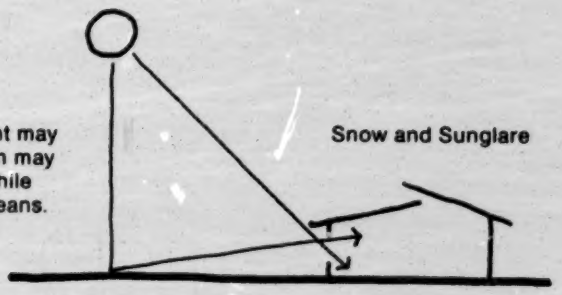


Screening with Plants

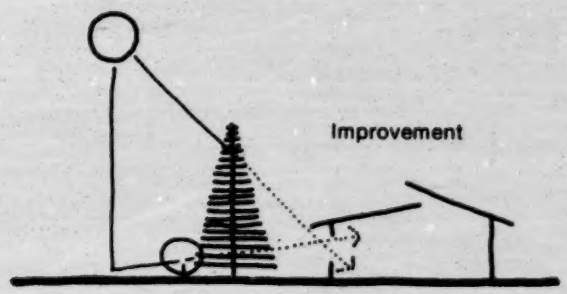
The problem of busy highways or other visually distracting areas adjacent to the school should be alleviated in the initial planning of the school.



In winter, snow glare and direct sunlight may be a problem for classrooms. A solution may be found that allows a pleasant view, while reducing the problem by a variety of means.

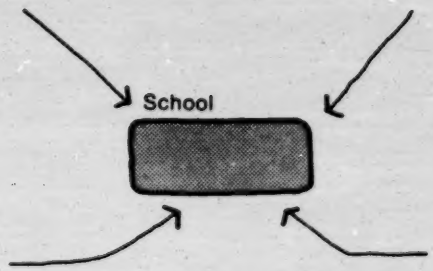


Snow and Sunglare

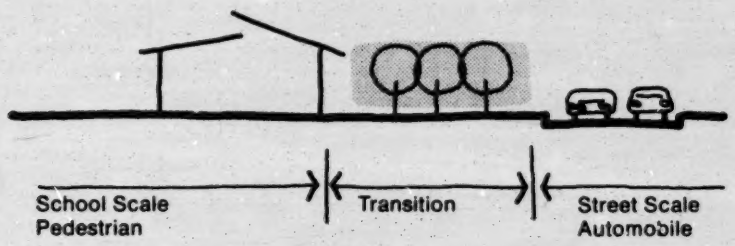


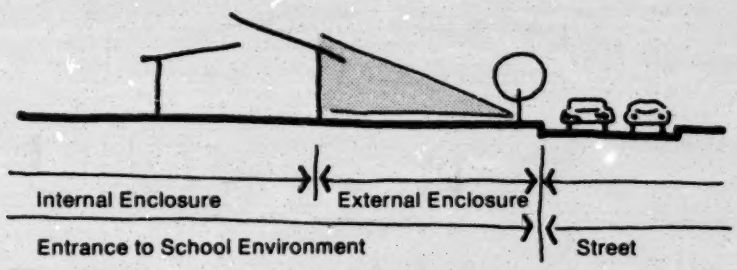
Improvement

Approaches to the school from community areas and from the street should be arranged so as to provide an inviting setting for the school building.

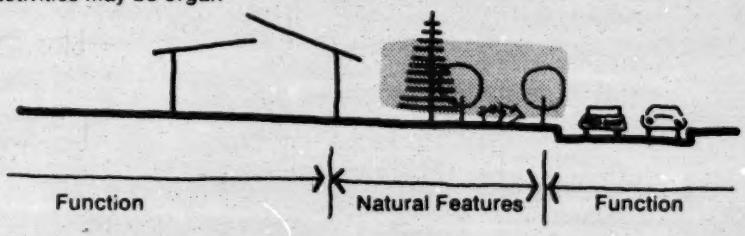


The function of the entrance area is to provide a transition from the vehicular scale of the street to the pedestrian scale of the school. The school's entrance area, which is visually semi-enclosed, is bounded by the site rather than by the school building. The entrance area should set the building off to advantage, when it is viewed from the street.

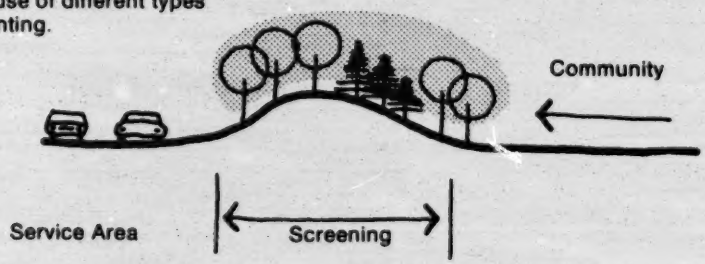




Natural features such as water, large boulders, or a stand of mature trees may be visually exploited by orienting vistas to focus on them; alternatively, activities may be organized around them.



Certain facilities that are deemed unsightly by the public and certain parts of the site that require some privacy can be effectively screened off by making use of different types of land forms and by planting.



Site Area

In order to arrive at the area requirements for school sites, the following factors should be considered:

1. The facilities to be provided in the buildings and on the grounds.
2. The anticipated enrolment and ultimate maximum size of the school.
3. The extent of anticipated future expansion of the buildings and outdoor facilities.
4. Building design and site planning considerations.
5. Site location in relationship to community facilities.
6. Site characteristics.

In many localities, land costs and restrictions placed on the site render the provision of all the facilities recommended in this publication unfeasible as separate entities. The possibility of combining areas to serve two or more functions should be considered. For example, outdoor learning and garden areas may be combined, as may outdoor learning and landscaped areas that are adjacent to the street. Physical education areas may be combined with unstructured (free play) areas. Parking during community functions may overflow into hard-surfaced play areas.

Any expansion of building facilities inevitably requires additional open space to accommodate expanded outdoor programs. For the purpose of estimating space needs, three stages of growth are discussed, namely, the 6-room, the 12-room, and the 20-room school. However, consideration should also be given to the following factors:

An expansion of the building program does not necessarily indicate a proportional increase in outdoor facilities. Certain areas such as the outdoor learning area, play area, and school garden require functional space that will remain more or less constant at all stages. Other areas such as the physical education area, the kindergarten play area, outdoor teaching area, and the traffic area require space that will increase (within the limits of their functional requirements).

Miscellaneous areas that include "setbacks" and buffer zones adjacent to roads and to adjoining properties increase in proportion to the total site area. Approximately 15 to 20 percent of the site area should be reserved for such purposes.

Space needs are estimated on the basis of good site conditions, where maximum efficiency of land use is possible. However, ideal sites are often unavailable; the usual site contains awkwardly shaped lots and property lines, or topography that is difficult to develop. Despite a high calibre of planning and design, some inefficiency of use is likely to occur. In such situations, assuming the opportunity exists or funds are available, the acquisition of additional acreage, beyond what is actually needed in terms of the building program, should be considered. In such cases, it is recommended that professional advice be sought before the land is acquired.

Based on the preceding considerations, the approximate area requirements for K-6 junior schools may be summarized as follows:

The Six-Room School
School Building
Outdoor learning area
Outdoor teaching area
Play area
Physical education area
Kindergarten play area
School garden
Pedestrian and vehicular area
Service and parking area
Miscellaneous area (setbacks, buffers, etc.)
Total area* 4½ acres *

The Twelve-Room School
Facilities as above 5½ acres *

The Twenty-Room School
Facilities as above 6¾ acres *

*Total acreage does not include contingencies for awkwardly shaped lots and property lines, or for topography that is difficult to develop.

The expansion of school facilities beyond what may reasonably be forecast is also a major problem in site acquisition. Thus, the possibility of combining community and school facilities becomes a critical factor in such circumstances.

The acreage necessary for a twenty-room school site when the site is separated from a community park is different than that needed for a site adjacent to parkland. The remote site, with facilities for a twenty-room school —including provision for some community use—would require approximately 6 to 7 acres. The community would still require a local park.

This acreage would allow:
School building
Outdoor learning area
Outdoor teaching area
Play area
Physical education area
Kindergarten play area
School garden
Pedestrian and vehicular area
Service and parking area
Miscellaneous areas

Should the ideal school board/park authority relationship be established, certain functional areas could be provided by each:

School-owned land 4 acres
School building
Outdoor teaching area
Kindergarten play area
School garden
Pedestrian and vehicular area
Service and parking area
Miscellaneous area

Community-owned land 2¾ acres
Park area
Outdoor learning area
Physical education area
Play area
Miscellaneous area

Total area: 6¾ acres

From the above example, the advantages to the school board and the community are clear.

Design Criteria

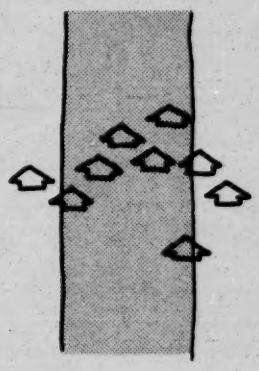
General Considerations

The purpose of this section is to provide guidelines of a generalized nature for various elements that make up the site. Since the budget for site work is always minimal, the objectives of the preceding sections must be met at the lowest possible cost. Maintenance should be an integral part of these considerations. It is important to recognize that good planning may effect considerable savings in the initial development of the site, as well as in long-term and short-term maintenance costs.

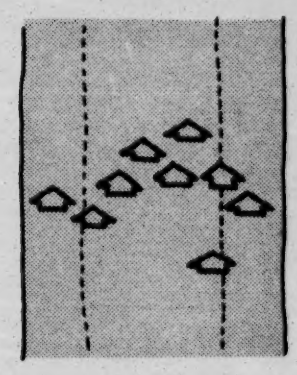
Walks and Paved Surfaces

While asphalt is, almost without exception, the only paving material used for hard surfaces, it is not necessarily the best material for all situations; therefore, any selection of material should be based on the purpose it is to fulfil.

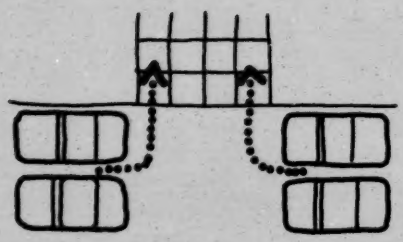
Problem
Walks should respond to the volume and type of pedestrian movement they have to serve. Student movement occurs at peak periods, and involves large masses of children moving to and from the school building.



Design Principle
Student traffic requires wide, paved walks to accommodate at least 4-6 people abreast.



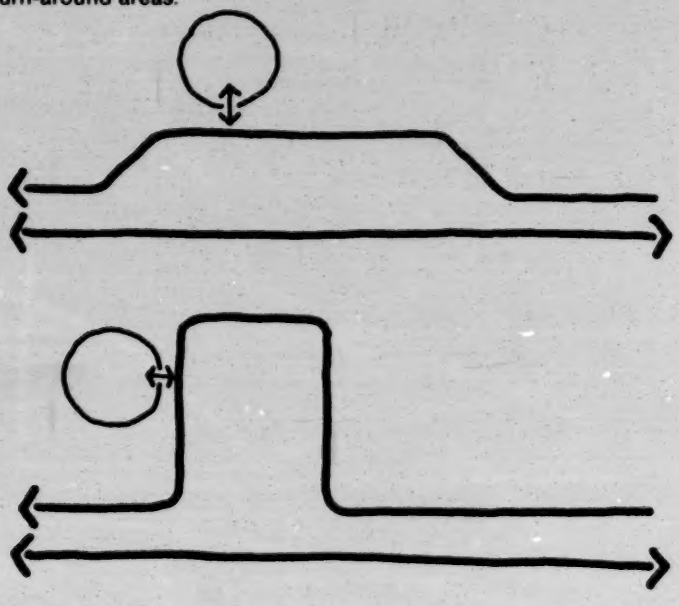
Where community access from parking areas to buildings is required, walks should be designed accordingly.



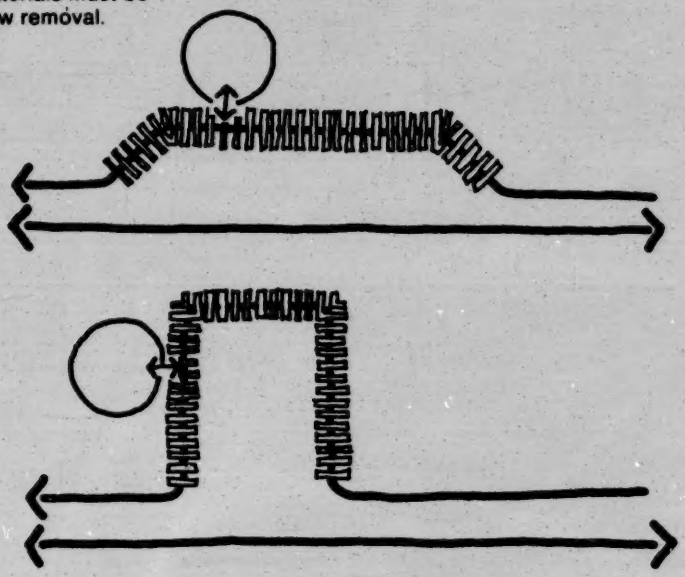
Problem
Turf or planting adjacent to paths invariably becomes eroded, particularly in areas of heavy pedestrian movement. Edges become unsightly, and cannot be satisfactorily maintained.

Design Principle
A strip of rough-textured non-removable material, laid on either side of paths, discourages overspill, and keeps edges neat and easy to maintain.

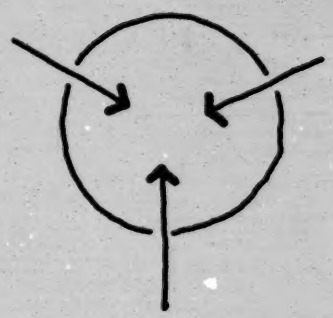
Problem
For reasons of safety, vehicles are required to slow down at entrances or turn-around areas.



Design Principle
Rough-textured paving materials may be used that will discourage fast movement and will indicate a different scale of movement between street and site. Materials must be suitable for reasonable snow removal.



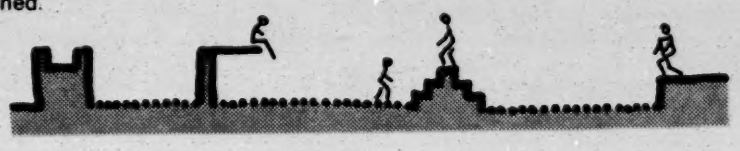
Problem
Because children congregate in certain areas, various kinds of intense activity are likely in these areas.



Design Principle
Areas used for different purposes require different kinds of hard surfaces that respond to reasonable maintenance and can satisfy functional requirements, as well as being visually pleasing.

Unstructured types of play such as ball-bouncing and hopscotch require smooth, hard surfaces, free of joints or rough texture.

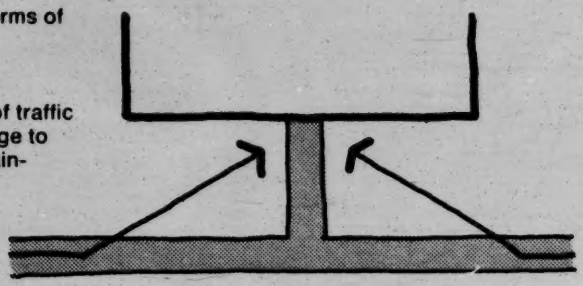
Structured play activities in which children climb, swing, fall, or crawl require softer, pliable surfaces that are permanent but can be reasonably maintained.

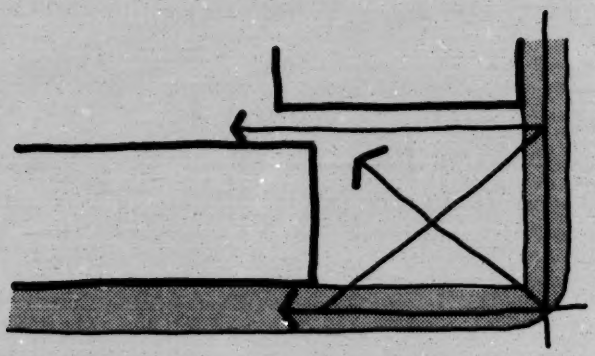


Gathering places near entrances where children congregate, and other areas immediately adjacent to buildings must be designed so as to reduce the tracking of dirt and mud into buildings; they must also be able to withstand heavy traffic. They require a variety of paved surfaces that facilitate snow removal and are visually pleasing in terms of texture, colour, and scale.

Problem

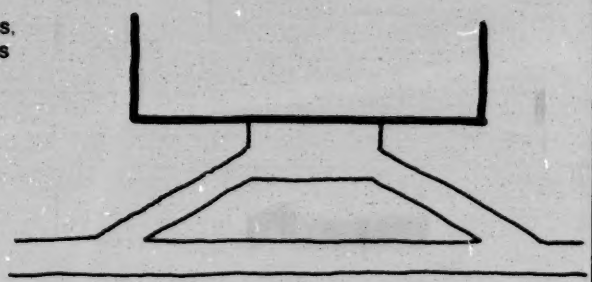
Paving placed without consideration of traffic patterns is ineffectual; it causes damage to planting and turf, and thus creates maintenance problems.

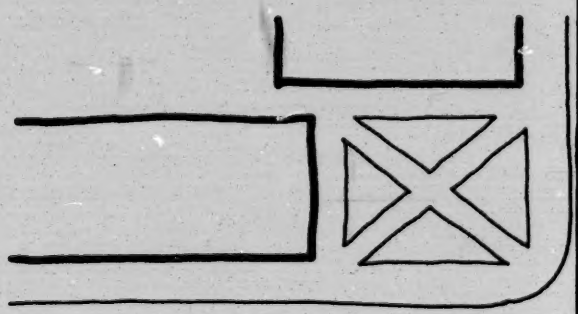




Design Principle

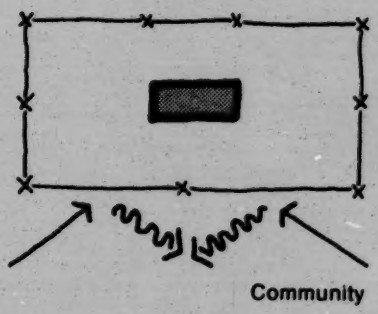
By responding to pedestrian traffic patterns, paving reduces the wear and tear on plants and turf, and facilitates snow removal and rapid access to shelter in winter.



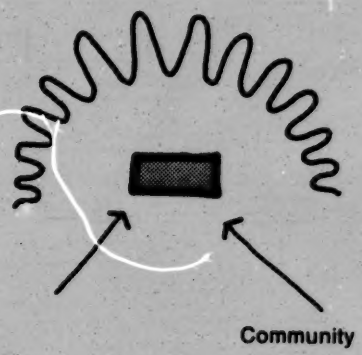


Fences

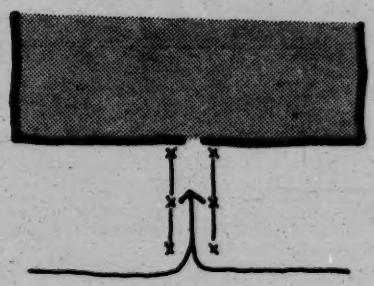
Problem
Fenced-in schools tend to discourage full community use, and acquire an institutional air that is incompatible with modern trends in education.



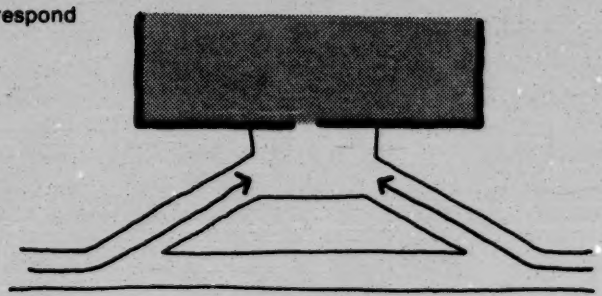
Design Principle
Where possible, fences should be eliminated from school properties, in order to allow full community/school participation.



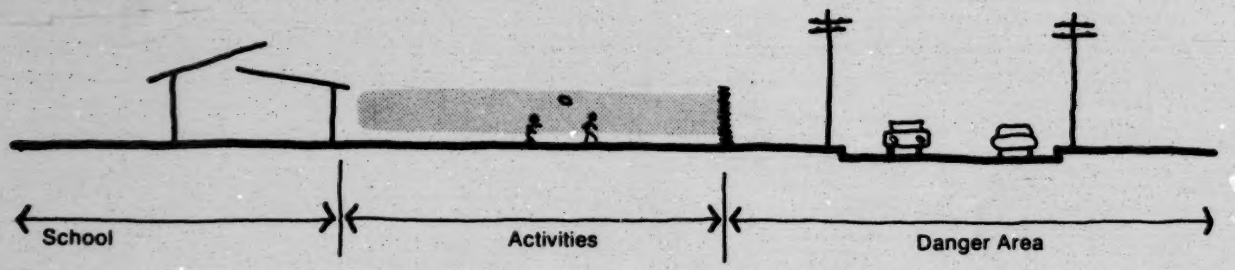
Problem
Fences that are installed to prevent pedestrians from following natural routes are unsightly, and are indicative of poor design planning.



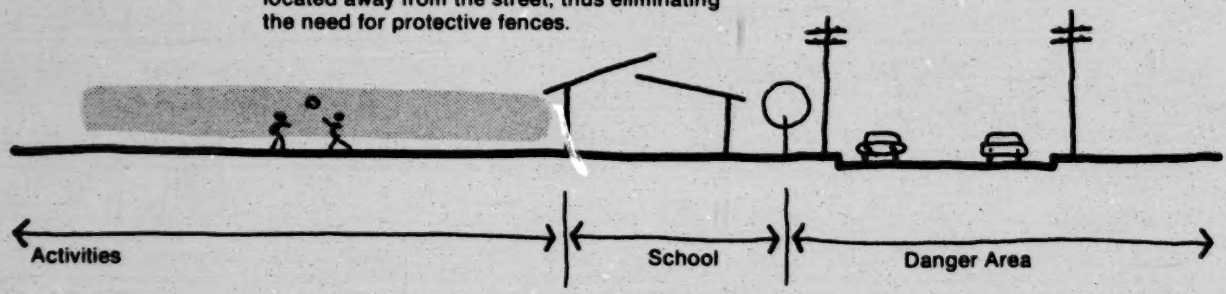
Design Principle
Pathways should be designed to correspond to favoured pedestrian routes.



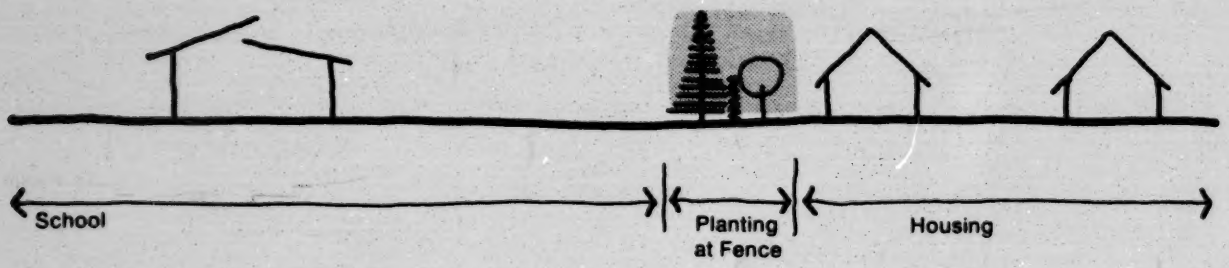
Problem
Unsightly fences are often located adjacent to streets or other danger areas, to provide protection for activities such as soccer and other ball games.



Design Principle
Where possible, such activities should be located away from the street, thus eliminating the need for protective fences.



Where fences are necessary—for instance, to fence off private property—their visual impact may be reduced by the planting of attractive shrubs.

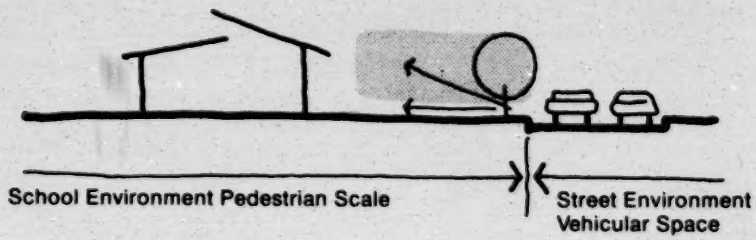


Planting

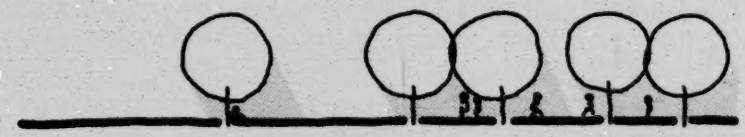
Problem
Plant materials (this includes such items as ground cover, flowers, shrubs and trees) are often used as decorative elements without consideration of the function they should serve.

Design Principle

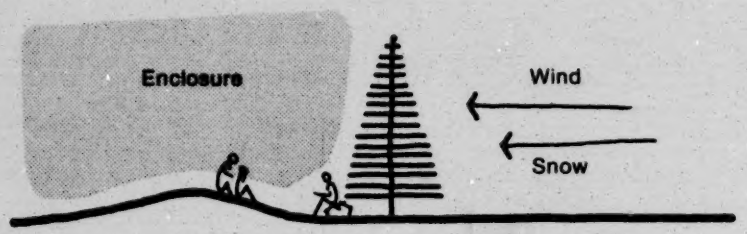
Streets
Tree planting on streets, along property lines, lends continuity and harmony to the streets, and facilities the transition from the street to the school area.



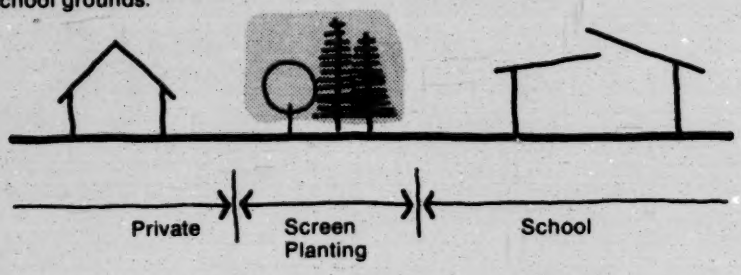
Paved Gathering Places
Trees provide shade over large paved surfaces, and help maintain favourable, microclimatic conditions; they also keep the ground plane free of obstructions.



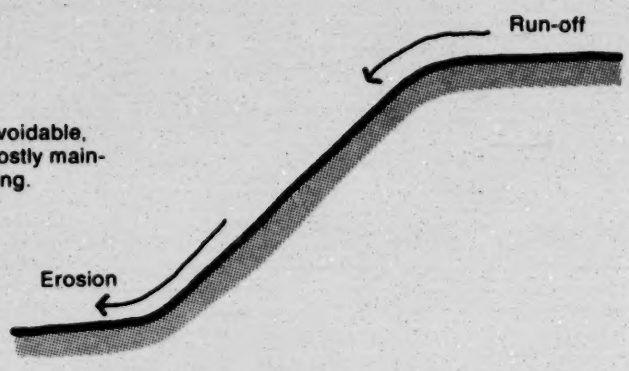
Enclosures
Planting provides shelter, and helps enclose areas that require protection from winds and driving snow.



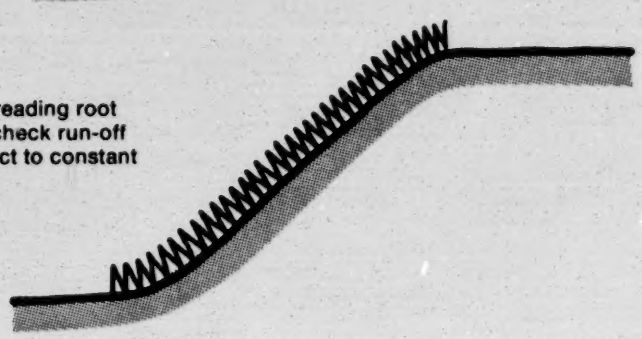
Screening
Planting may be used as a screen between school grounds and private property; it may also screen out features requiring visual separation from the school grounds.



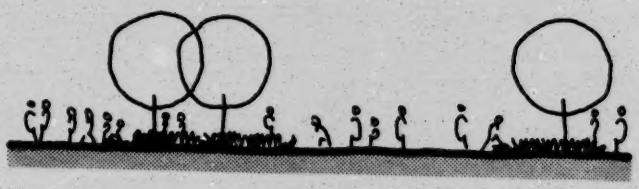
Problem
Steep slopes are sometimes unavoidable, and are subject to erosion and costly maintenance due to run-off and gullying.



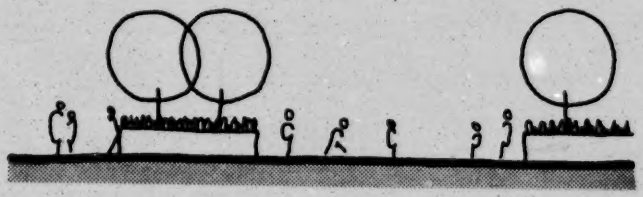
Design Principle
Rapidly growing plants with spreading root systems that hold the soil and check run-off may be used in areas not subject to constant or intensive human use.



Problem
Paved areas often need planting, but such areas are difficult to maintain when planting at grade.

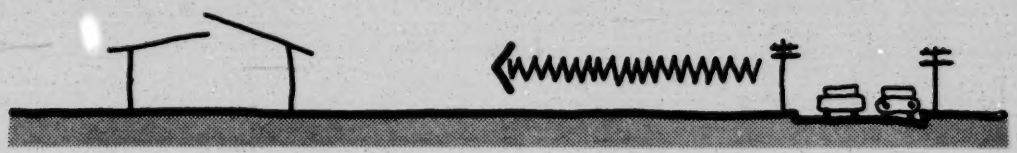


Design Principle
Planting raised above the ground level reduces wear and tear, and may also provide seating places.

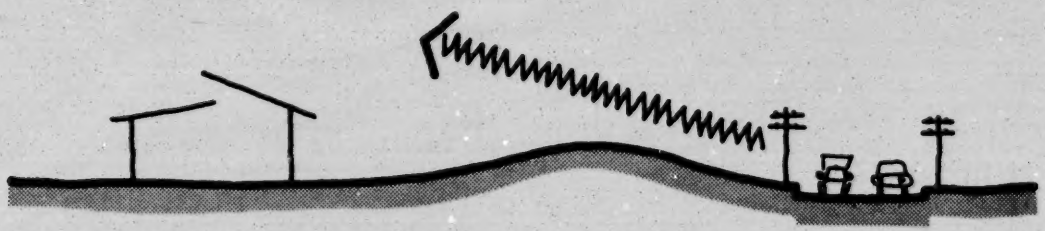


Grading and Earth Form

Problem
Sometimes when visual and aural screening is required, planting may be unsuitable or inappropriate.

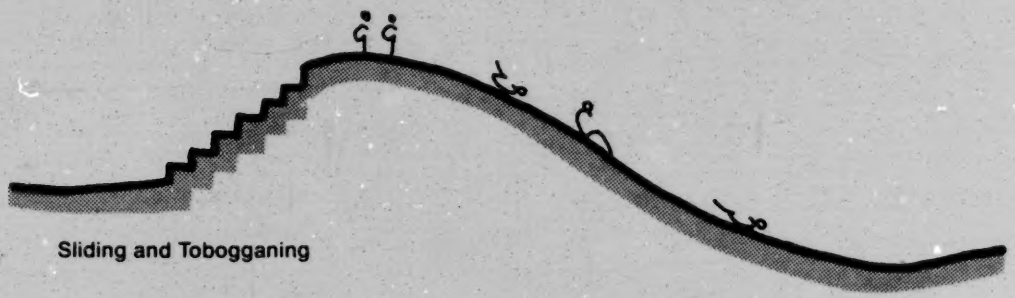


Design Principle
The use of earth that has been excaved from the site can be graded to form a visual barrier, and effectively provides screening from noise and an undesirable view.

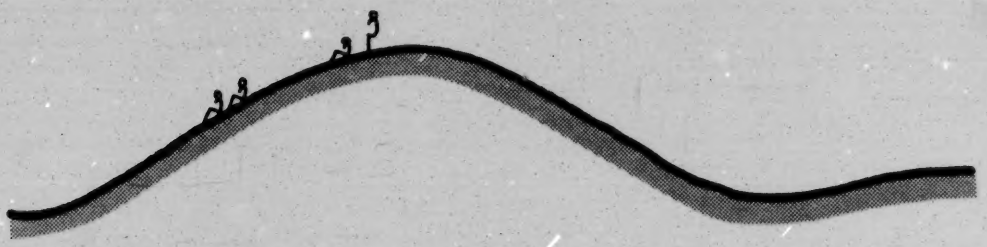


Problem
A totally levelled site does not provide the best environment for children's play.

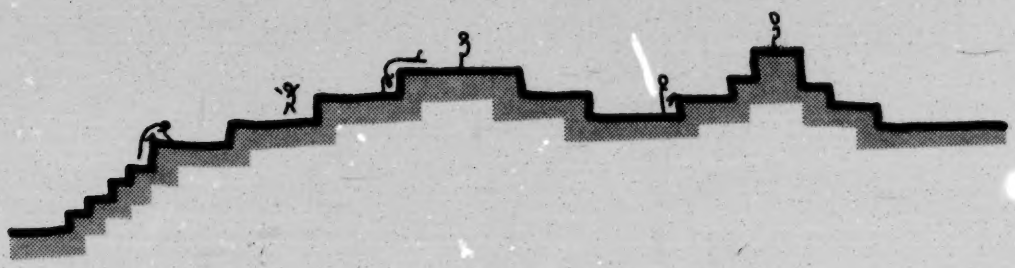
Design Principle
Graded earth formations are often very useful in providing creative play areas. They also tend to be visually more interesting than screens, and can fulfil a whole range of uses in all seasons. Where earth is available, it may be used to make such formations. This reduces the need for providing play equipment, and is an economical and effective way of cutting costs.



Sliding and Tobogganing



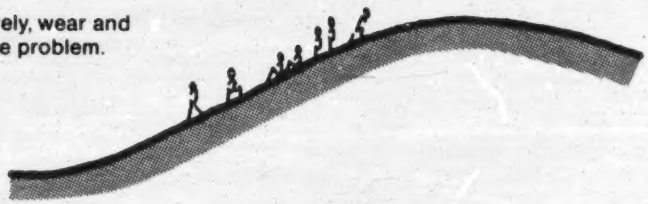
Lookouts



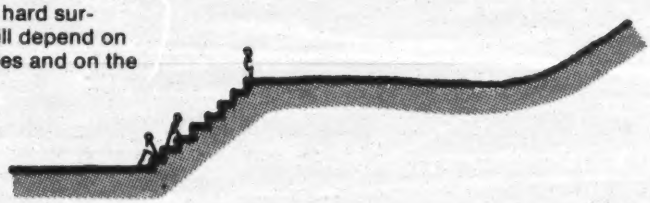
Climbing

Slopes

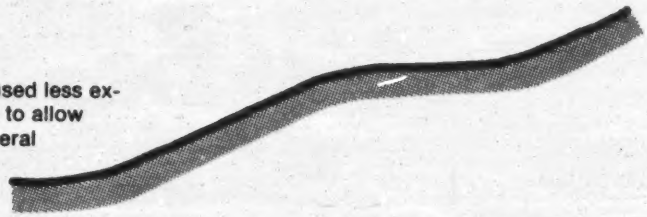
Problem
Where slopes are used intensively, wear and tear can become a maintenance problem.



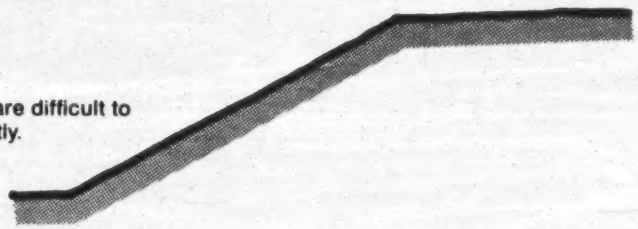
Design Principle
If slopes exist in structured play areas or in other areas of use closely associated with the school building, they should be hard surfaced. The choice of material will depend on the function that each area serves and on the need for snow removal.



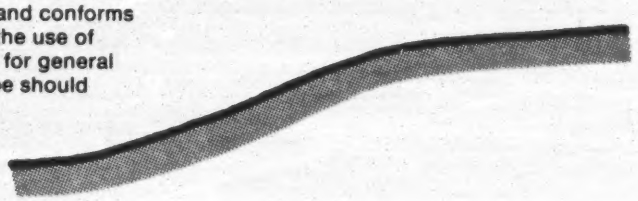
If slopes exist in areas that are used less extensively, they should be graded to allow greater stability and facilitate general maintenance.



Sharp angles and steep slopes are difficult to maintain, and tend to be unsightly.

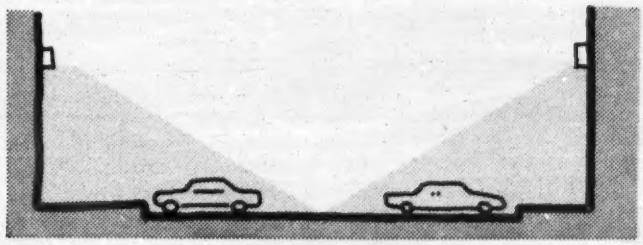


A smooth transition from the toe to the crest of a slope is easier to maintain, and conforms to ground formation. To enable the use of machinery for grass-cutting and for general maintenance, the maximum slope should be 1 in 3.



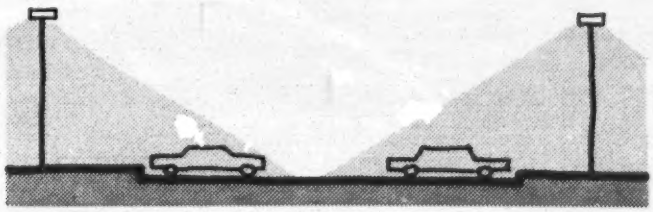
Lighting

Problem
Lighting for school grounds is important, not only from the point of view of security, but also since many school buildings are used by the community at night.

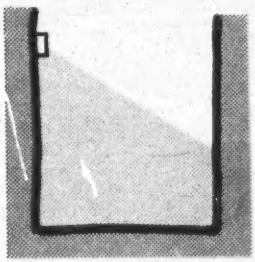


Design Principle
The types of lighting used should be related to the different areas concerned and the functions they serve.

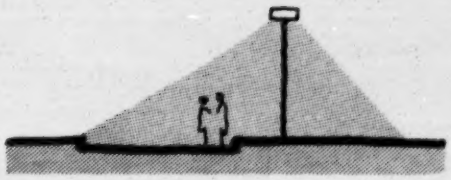
Parking areas require a general level of illumination of about .25 footcandles; either wall-mounted floods or pole-mounted fixtures may be used.



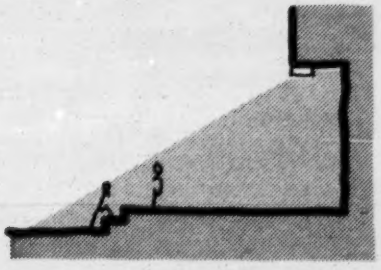
Security lighting for small, enclosed spaces, corners or recesses should be of a level of illumination similar to that of parking areas; either wall-mounted floods or pole-mounted fixtures can be used for this purpose.



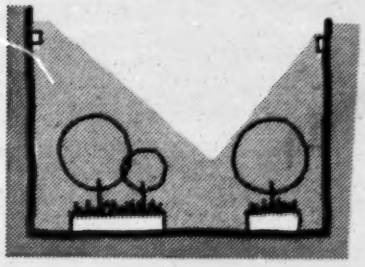
Major pedestrian paths from the street, parking areas, or the surrounding neighbourhood ought to be well lit, for reasons of safety. A general level of .5 footcandles is adequate; pole-mounted fixtures can be used.

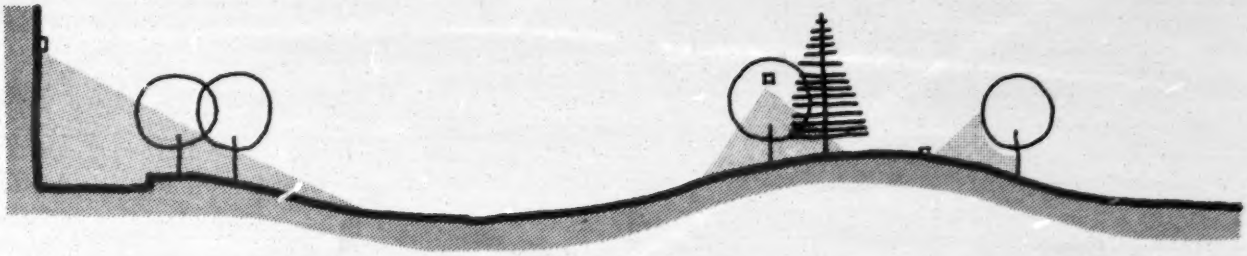


At entrances or gathering places, or on steps, lighting is used to highlight the "hot spot" where groups congregate. Where possible, the fixtures used should be incorporated into the building.



Landscaped areas are sometimes associated with walks; sometimes they are self-contained, as in courts. Lighting should illuminate selected parts such as planted areas or building facades. This lighting is important both for security and aesthetic reasons. Light levels may be kept low: fixtures may be spots or floods. They can be mounted in trees, on buildings, or, occasionally, set on the ground.





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